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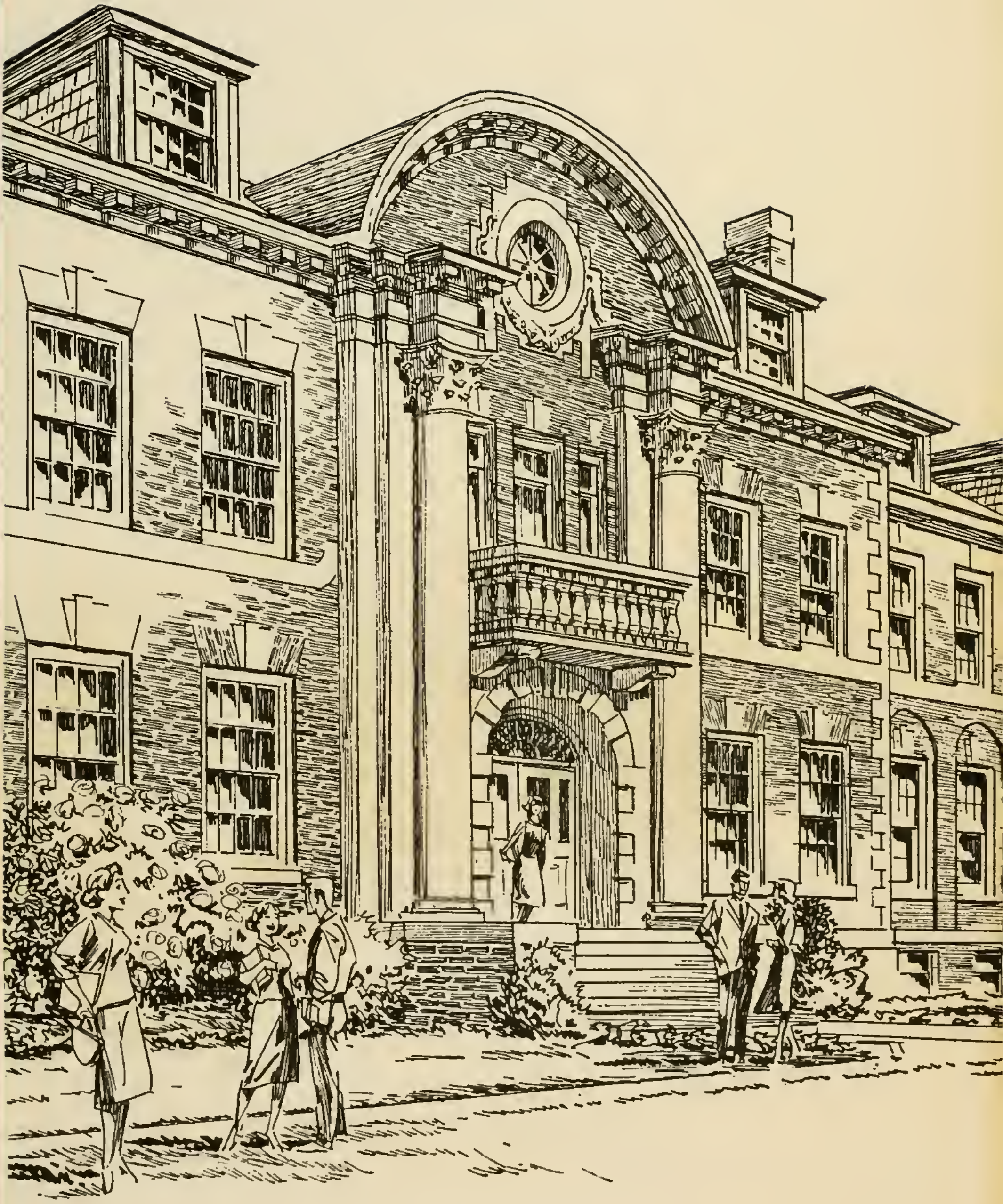
NEW HAVEN COLLEGE



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NEW HAVEN COLLEGE

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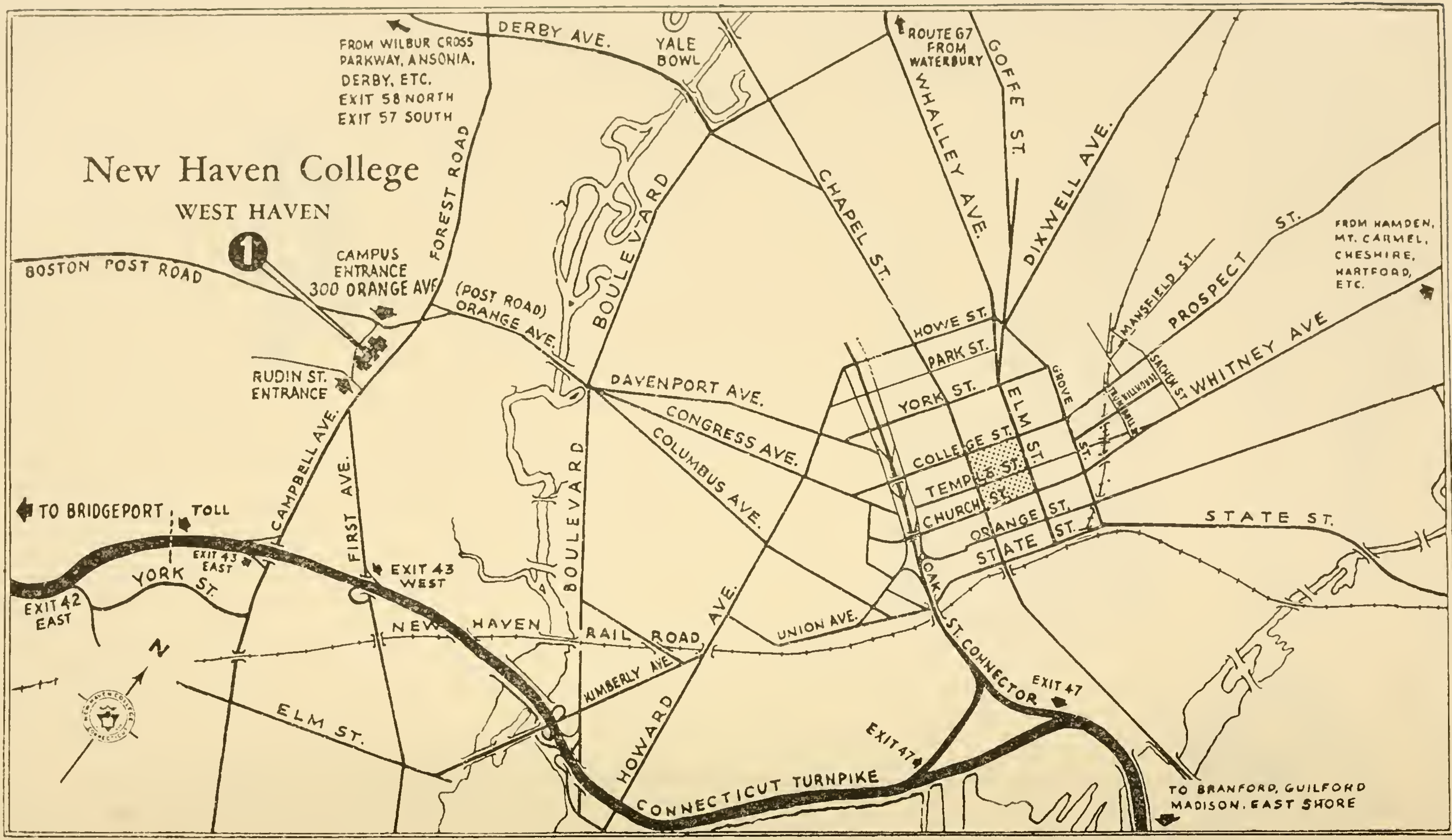

NEW HAVEN COLLEGE, 300 Orange Ave., West Haven, Conn.

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NOMINATING: Mr. Smith, *Chairman,* Mr. Metcalf, *Vice Chairman;* Mr. J. Fischer.

PERSONNEL: Mr. Hiscock, *Chairman,* Mr. Hodge, *Alternate;* Messrs. J. Fischer, Metcalf.

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CURRICULUM AND STANDARDS: Mr. Zweig, *Chairman,* Mr. Tiernan, *Vice Chairman;* Messrs. Bowerman, Powrie.

DEVELOPMENT: Mr. Bowerman, *Chairman,* Mr. Maxcy, *Vice Chairman;* Messrs. Gilbert, Miller, Talalay, Wilson.

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PUBLIC AND INDUSTRIAL RELATIONS: Mr. Gilbert, *Chairman,* Mr. Maconi, *Vice Chairman;* Messrs. Cleaver, J. Fischer, Maschmeier.

STUDENT AND ALUMNI AFFAIRS: Mr. Wilson, *Chairman,* Mr. Angeloni, *Vice Chairman;* Messrs. Tiernan, Turner.

STUDENT CENTER: Messrs. Botwinik, Bowerman, Mrs. Taylor.

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Stephen J. Bennett, B.S., A.M.	*Dean of Faculty*

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James J. Fanning, B.S., M.A.	*Assistant Director of Admissions*
John W. Ghoreyeb, B.A., M.A.	*Director of Student Services*
Sydney J. Goluboff, A.B.	*Coordinator of Student Publications*
Olga C. Griffeth, A.B.	*Secretary to the College*
Donald R. Ormrod, B.S.	*Director of Athletics*
Lawrence C. Parker, A.B., M.A.	*Director of Development and Alumni Relations*
Virginia M. Parker, A.B.	*Director of the Division of Special Studies*
Elizabeth H. Patton, B.S., M.S.	*Librarian*
Constance F. Peberdy, B.A.	*Public Relations Assistant*
Katharine Blenis Ramshaw, A.B., B.S.	*Registrar*
Arthur M. Reed, B.S.	*Director of Public Relations*
Cushman L. Robertson, B.S., M.A.	*Director of Admissions and Guidance*
George A. Schaefer, B.S., M.B.A.	*Director of Evening–Summer Extension Programs*
Yi Yuan, B.A., M.S.	*Assistant Librarian*

Faculty, Full Time:

Joseph J. Arnold, B.S., M.S.	*Chairman, Department of Industrial Engineering*
Irwin S. Boak, B.S., M.A.	*Chairman, Department of Physics*
George W. Colton, Ph.B.	*Assistant Professor, Department of Mechanical Engineering*
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Earl O. Hamel, Jr., A.B.	*Instructor, Department of Mathematics*
William G. Holman, A.B., M.A., C.P.A.	*Chairman, Department of Business Administration*
Phillip S. Kaplan, B.A., M.A.	*Chairman, Department of Social Studies*

ROBERT R. KIRBY, B.A., M.A.
Instructor, Department of English and Humanities

GARABED D. KIREMIDJIAN, B.A.
Instructor, Department of English and Humanities

SAM LIAO, B.A., M.S.
Assistant Professor, Department of Electrical Engineering

IVAN LOBAY, M.E.
Assistant Professor, Department of Mechanical Engineering

PETER A. MACARY, B.A. .... *Instructor, Department of Industrial Engineering*

CLAUDE I. MCNEAL, B.S.
Instructor, Department of English and Humanities

RICHARD C. MORRISON, A.B., M.S. .... *Instructor, Department of Physics*

WILLIAM H. NYCE, B.S. .... *Coordinator, Department of Chemistry*

FLORENCE OSBORN, B.A.
Instructor, Department of English and Humanities

ASHER O. PACHOLDER, B.S., M.S.
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JAMES U. PIPER, B.A., M.S., Ph.D.
Assistant Professor, Department of Chemistry

EUGENE D. ROCHETTE, B.S., M.E., P.E.
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Assistant Professor, Department of Industrial Engineering

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Associate Professor, Department of Business Administration

RUTH W. YANOVER, B.A., M.A.
Assistant Professor, Department of Business Administration

STANDING COMMITTEES OF FACULTY AND STAFF

The President and Vice President are ex officio members of all committees.

Academic Council: Dr. Hutchinson, *chairman;* Mr. Bennett, *vice chairman;* Messrs. Arnold, Boak, Gross, Holman, Kaplan, Nyce, Mrs. Patton, Mr. Schaefer, Dr. Walker, Mr. Warner.

Academic Standing and Admissions: Mr. Robertson, *chairman;* Messrs. Arnold, Bennett, Mrs. Ramshaw, Mr. Schaefer, Dr. Walker, Mr. Warner.

Athletic Policy: Mr. Bennett, *chairman;* Messrs. Ormrod, Robertson, Rochette, Strother.

Commencement: Mr. Bennett, *chairman*; Mr. Byard, Mr. Parker, Mrs. Ramshaw, Messrs. Reed, Schaefer, Simons, Warren J. Smith.

Convocations and Assembly: Mr. Ghoreyeb, *chairman*; Mr. Boak, Mr. Kaplan, Dr. Weiss.

Evening Division: Mr. Schaefer, *chairman*; Messrs. Bennett, Gross, Holman, Kaplan, Nyce.

Guidance: Mr. Fanning, *chairman*; Messrs. Arnold, Goluboff, Morrison, Mrs. Osborn, Mr. Sparks.

Library: Mrs. Patton, *chairman*; Messrs. Kaplan, Liao, Lobay, Nyce, Dr. Piper.

Personnel Policy: Mr. Ghoreyeb, *chairman;* the chairman of the Faculty Senate, (*ex officio*), Mr. Bennett, Mr. Byard, Mrs. De Palma, Dr. Hutchinson, Messrs. Pacholder, Parker, Reed.

Registration: Mrs. Ramshaw, *chairman*; Mr. Bennett *ex officio,* Mr. Hamel, Mr. Schaefer, Dr. Walker, Mr. Warner.

Student Aid and Services: Mr. Ghoreyeb, *chairman*; Mr. Bennett *ex officio*, Messrs. Holman, Ormrod, Robertson, Schaefer.

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Warren J. Smith	*Vice Chairman*
Ruth W. Yanover	*Secretary*

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Bridge Club	Mrs. Florence Osborn
Drama Society	Mr. Claude I. McNeal
Society for the Advancement of Management	Mr. Joseph J. Arnold
Sportsmen's Club	Mr. Irwin S. Boak
Weight Lifting Club	Mr. Earl O. Hamel, Jr.

Fraternities and Sororities

Mu Iota Chapter of Phi Theta Kappa (honorary) .... Mrs. Ramona Beeken
Tau Kappa Beta (social)
Mr. John W. Ghoreyeb and Mr. Gene R. Simons
Alpha Phi Omega (service)
Mr. Warren J. Smith, Mr. Edward J. Maffeo, Mr. John W. Ghoreyeb
Phi Zeta Psi (social and academic) .... Mr. Thomas C. Warner, Jr.
Chi Kappa Rho (social and service) .... Mrs. Virginia M. Parker
Kappa Phi Sigma (social) .... Mrs. Florence Osborn, Mr. Warren J. Smith

Publications

News, Year Book, Hand Book .... Mr. Sydney J. Goluboff

Student Organizations

Day Student Council .... Mr. John W. Ghoreyeb
Evening Student Council .... Mr. George A. Schaefer

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The purpose of the Engineering Advisory Council is to act in an advisory and consultative capacity to the Engineering Department of the College.

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Ansonia, Connecticut

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General Electric Company
Hamden, Connecticut

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Universal Industries, Inc.
West Haven, Connecticut

Harry Cottle
Chief Engineer
MB Electronics Division
Textron Electronics, Inc.
New Haven, Connecticut

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C. Cowles & Company
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Olin Mathieson Chemical Corporation
New Haven, Connecticut

Felix Zweig
Dean, School of Engineering
Yale University
New Haven, Connecticut

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Vice President, Secretary and Treasurer
Acme Wire Company
New Haven, Connecticut

New Haven College

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History

New Haven College was founded by the Y.M.C.A. of New Haven in 1920 as a branch of Northeastern University. As an independent, coeducational college, it has, at all times, sought to serve the community.

By act of the Connecticut General Assembly, the College was incorporated in 1926 and was authorized to grant the Associate in Science degree. At the same time, it negotiated an agreement with Yale University for the use of classrooms and laboratories for the operation of an evening college.

During the years which followed, the College, in cooperation with local businesses and industries, developed and conducted a systematic educational program.

From 1941 to 1945, the College administered the official Yale University Engineering, Science, Management War Training Program for New Haven County. Accreditation by the New England Association of Colleges and Secondary Schools in 1948 marked another significant step forward.

The next decade saw the inauguration of the Division of Special Studies, The School of Executive Development, and the Reading Center. During this period two daytime programs for recent high school graduates were also begun: the Cooperative Plan, in which students alternate terms of work and study, and the Engineering Program. Since 1958 the College has been authorized by the Connecticut General Assembly to offer courses of study leading to the Bachelor of Science degree to both day and evening students.

The acquisition of the present campus in 1960 provided the opportunity for the College to expand its offerings for full-time students and to develop further its other credit and non-credit curricula. The first major addition was the Arts & Science Program in the Day Division.

In March, 1962, the College acquired 28 acres of undeveloped land three blocks north of the present campus for planned future use.

Service to the individual student, whether of the usual college age or older, and to business, industry, and institutions of the New Haven area is the primary function of New Haven College. This philosophy will be the controlling factor in all the plans for the future.

General Information

Divisions of the College

New Haven College has four divisions, each of which serves a special function. They are: The Credit Programs, Daytime and Evening; The Division of Special Studies; The School of Executive Development; The Reading Center. All divisions of the College are co-educational.

The Credit Programs

Day—The degree-granting day division offers curricula which lead to the two-year Associate degree and the four-year Bachelor degree. An Associate in Science may be obtained in Business Administration, Engineering, Chemistry, Physics, Mathematics or Arts and Science.

Students pursuing a course of studies leading to an Associate in Science degree in Arts and Science may elect a major in General Studies, Commercial and Advertising Art, or Journalism and Public Relations.

Students pursuing a course of studies leading to a Bachelor of Science in Business Administration may elect a major in: Accounting; General Business Administration; Industrial Administration with either a general or a computer option; Marketing; or Public and Social Administration.

Students pursuing a course of studies leading to a Bachelor of Science in Engineering may elect to take their degrees in Electrical Engineering, Industrial Engineering or Mechanical Engineering.

Evening—The degree-granting evening division offers curricula which lead to an Associate in Science or a Bachelor of Science degree.

An Associate in Science is offered in the following areas: General Studies; Accounting; Business Administration; and Engineering with a major in General, Electrical, Industrial, Mechanical or Metallurgical Engineering.

A Bachelor of Science is offered in the following areas: Business Administration with majors in Accounting, Business Administration, Industrial Administration, Marketing or Public and Social Administration; Electrical Engineering; Industrial Engineering with majors in General Industrial Engineering or Metallurgical Engineering; Mechanical Engineering.

The Division of Special Studies

This Division offers a series of special courses in the fields of engineering, business and general areas. Usually students taking these courses do not receive academic credits. The courses generally are designed to provide supplemental knowledge and skills needed in specialized jobs in business and industry. Further information about this Division may be obtained by requesting separate bulletins from the College.

The School of Executive Development

This four-year program for middle-level executives consists of advanced studies in the field of management, with emphasis placed on the development of the student's breadth and understanding outside the area of his or her specialization. The School is guided by a group of senior executives of New Haven area businesses and industries, and its enrollment is limited to individuals designated by their respective companies and approved by the College. This program is offered in the late afternoon hours. Additional information about it may be obtained from the College upon request.

The Reading Center

It is the aim of the New Haven College Reading Center to offer a varied program of reading techniques and study skills to fit the specific needs of students and adults. The program is designed for classroom group teaching techniques on the elementary, secondary, college and adult levels. The program includes small group and individual tutoring for students of all age and accomplishment levels. In-plant management training programs can be arranged. Additional information about this program may be obtained from the College upon request.

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Accreditations and Memberships

New Haven College is a co-educational, non-sectarian, independent institution of higher learning chartered by the Legislature of the State of Connecticut, accredited by the Connecticut State Department of Education as a junior and senior college. The College holds membership in The New England Association of Colleges and Secondary Schools, The American Association of Junior Colleges, The Connecticut Council on Higher Education, The Connecticut Conference of Community and Junior Colleges, The American Council on Education, and The New England Junior College Council.

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Admission

Since each division of the College has its own admission requirements, these requirements are defined in detail in subsequent pages of this catalog.

In general, graduates of accredited secondary high schools are eligible for admission. However, in special cases persons who have not completed their high school education may be admitted to the various divisions of New Haven College by meeting certain specified conditions.

In the case of adults, the College is interested in evidence of maturity and motivation as well as in formal education as prerequisites for admission.

With the exception of "auditors," students wishing to take any course, whether or not they seek a degree, must satisfy the admission requirements.

Admission of Students Transferring from Other Colleges

Requirements—Transfer students who present evidence of completion of at least thirty semester hours of study at an accredited college with a grade of "C" or better may be admitted on the basis of an official transcript and will not be required to take the Scholarship Aptitude Examination.

For the purpose of determining placement, the following examinations are required as indicated below:

The *Mechanics of English Examination* and the *Reading Comprehension Examination* are required unless the transcript shows the completion of at least three semester hours of college English with a grade of "C" or better.

The *Mathematics Examination* is required unless the transcript shows the completion of at least three semester hours of college mathematics with "C" or better grades.

Placement in courses as a result of the above examinations will be on the same basis as for applicants from secondary schools.

Transfer students who *do not have* the required thirty semester hours of work as noted above, or who have been dismissed for academic deficiency, are required to take the Scholastic Aptitude Examination in addition to the other placement examinations which are applicable, as described above.

Transfer students who are not certain of the quality of their previous work are advised to take all entrance examinations lest their transcripts be delayed and of an unacceptable quality.

Advanced Standing—Credit for work applicable to the program undertaken at New Haven College will be granted tentatively upon receipt of official transcript from the previous college. The student will be notified of the credit granted. It will be officially granted only upon the successful completion of a year's work at New Haven College.

Transfer students who wish to fulfill the requirements of the A.S. degree at New Haven College must complete a minimum of eighteen semester hours at this College, twelve of which are in their field of specialization.

Transfer students for the B.S. degree must complete a minimum of thirty semester hours at this College, fifteen of which are in their field of specialization.

Application Procedures

Those interested in seeking admission should call or write the College and arrange for a personal interview with a staff member. At the time of the interview the applicant will complete a Personal Data Form and will plan his program. Interviews may be scheduled during college office hours at the convenience of the applicant.

When the student decides to seek admission, he pays the application fee and arranges for the procurement of necessary transcripts.

Following application, the College requests the secondary school record of the applicant. Applicants who wish to present college transcripts, either for admission purposes or for advanced standing, must themselves request their college transcripts be sent to the College. The College provides a form on which the applicant may make this request.

The applicant next takes such placement examinations as are required of him and is notified in writing of his acceptance or rejection, and of the subjects he will be required to take as a result of his performance on the placement examinations.

During the registration period he fills out the registration forms indicating the courses he wants, and pays the tuition charges.

Transferability of Credit

In accordance with the usual practice among institutions of higher learning, transfer of credit from this College to another institution will be determined by the other institution in terms of the achievement and promise of the individual seeking transfer. The institution to which transfer is being made will also evaluate specific courses in terms of their length and content in relation to its specific requirements. New Haven College is an accredited institution and its credits will be given consideration by the major institutions of the country in terms of the conditions outlined above.

Coordinated Course Offerings

New Haven College **Quinnipiac College**

In order to broaden the educational opportunities available to their students, New Haven College and Quinnipiac College have entered into a reciprocal agreement through which students formally enrolled in either institution may elect certain courses offered by the other college, subject to the approval of the respective Deans.

Credit, grades and quality points earned in courses covered by this agreement will be officially recorded at New Haven College.

The Dean of New Haven College should be consulted for additional information concerning these coordinated course offerings.

Student Personnel Services

In the interest of assisting each student to achieve his fullest development as a person and of helping him to utilize most effectively the instruction offered, the College makes available to all students a variety of services and information which are his for the asking, including: counseling and guidance, testing, job placement, loans and scholarships, and student activities.

Counseling and Guidance—The College maintains a counseling and guidance officer on its staff. However, members of the staff and faculty also reserve many hours for counseling with students. Students need only to request an appointment in order to seek information and help. By inquiring at the office, a student may learn who is most qualified to discuss his problem with him. Counseling and guidance is offered in such areas as program planning; study habits and methods; personal, marital or domestic problems; vocational selection and choice; job adjustment; relationship with Veterans Administration, the military establishments and Selective Service; and others.

Placement Service—The College receives requests from both students and employers for job placement services. Although the College does not conceive its function to be that of a public employment service, it is interested in and prepared to render placement service within the limitations of its purposes and resources. It acts as a medium of exchange of information between students and former students who desire placement, and employers seeking personnel. It is particularly interested in helping students find positions which require college study or which lead to positions that require such education, and in assisting students to find employment related to their program of studies.

A student or former student of the College who desires placement should call at the office for a placement application form and at that time will receive specific information as to whom he is to contact in regard to his placement problem.

A company wishing to use the placement facilities of the College should list the job and the desired qualifications in the form of a letter. A member of the College staff will then contact the company to discuss procedure and possibilities of filling the position.

Testing—Counselors, upon request, will report and interpret to students the results of their entrance tests.

The Directors of Admission and of Guidance as professional vocational counselors, are prepared to undertake vocational testing and counseling with students requesting this service.

Financial Aid—Various types of financial aid are available at the College, amounting to well over $80,000 annually. Financial aid is given in one or more of the following three forms, academic scholarships, loans, and bursary scholarships. Applications for financial aid may be obtained from the College office and must be submitted no later than May 1 for the Fall Term, and January 1 for the Spring Term.

Financial aid is usually not available for the summer term. Students needing assistance usually seek employment during the summer to help defer their expenses during the Fall and Spring terms.

Academic Scholarships—A limited number of academic scholarships are available each year. These are awarded on the basis of scholastic record, financial need, evidence of self-help, and overall contribution to the College. To be eligible for an academic scholarship, a student must have a cumulative Quality Point Ratio of 3.0, and evidence of financial need.

Scholarships are administered by the Student Aid and Guidance Committee of the Faculty.

The State Society of Certified Public Accountants annually makes scholarship awards to the leading junior and senior students majoring in accounting.

The Connecticut Safety Society makes available annually to qualified students in the Evening Division three Everett W. Martin Scholarships for the Industrial Safety & Hygiene course.

The Industrial Management Club of New Haven makes available scholarships to students attending New Haven College. These scholarships are administered by the Educational Committee of the Industrial Management Club under the policies established by the Club.

The Alumni Association makes scholarship grants to undergraduates.

The New Haven Chapter of the American Society of Tool Engineers provides annual scholarships to students in mechanical engineering.

The New Haven College Bookstore offers an annual scholarship to full time students who have demonstrated academic ability.

The Olin Employees Fund offers full tuition scholarships to sons and daughters of employees attending the College.

A fund provided by an anonymous donor is available for evening students who are non-professional, permanent employees of Yale University. Half tuition is provided under this scholarship.

Yale University also provides scholarship assistance for sons and daughters of academic personnel.

Various student organizations contribute to scholarship funds.

All other scholarships are taken directly from the operating budget of the College.

Loans—Loan funds are available to full-time students under the provisions of the National Defense Student Loan Program as established under the National Defense Education Act of 1958.

Established by a donation from the Day Student Council to United Student Aid Funds, Inc., a private, non-profit service corporation, loans are available for upperclassmen at low interest rates.

The Connecticut Section of the Institute of Electrical and Electronic Engineers Student Loan Fund offers non-interest bearing loans to senior students in Electrical Engineering. This is administered by the Student Aid and Guidance Committee of the Faculty.

Bursary Scholarships are available for students who have a financial need and can profit from the program. Under this program, on-campus work is assigned and students can earn a part of their tuition.

Bursary scholarships are administered by the Office of Student Services.

Student Councils—Separate day and evening student councils are elected annually by the respective student bodies. The councils have the responsibility for initiating, organizing, and carrying through extra-curricular activities and of performing liaison functions between students and the College staff.

Clubs and Organizations—There are various clubs and organizations, such as The Amateur Radio Association, Weight Lifting Club, Drama Society, Bridge Club, Society for the Advancement of Management, Sportsmen's Club, and others, open to interested students.

Athletic Activities—Intramural competition is organized and is sponsored by the College in basketball, softball, touch football, bowling, golf and tennis.

A full schedule of intercollegiate athletics is carried out in baseball, basketball, golf, hockey, soccer and tennis. New Haven College is a member of The National Association of Intercollegiate Athletics, and The Southern New England Conference.

Fraternities and Sororities—There are many national and local service, social and honorary fraternities and sororities active on campus. They sponsor events such as the Blood Program, T.B. X-Rays, and other service and social functions.

Student Publications include *The News,* the all-college newspaper edited and published by the student group, *The Chariot,* the annual yearbook, and the *Student Handbook.* Any student may volunteer his services on any of the student publications.

Social Activities—Starting with the Freshman Picnic and Freshman Week and reaching a climax with the Senior Banquet and Prom in June, the social calendar is filled with informal and formal dances, the Winter Weekend activities, a variety show, and several major drama productions. Freshman and upperclass teas are held for students, parents and faculty members. The Evening Division has many social activities of its own, including an annual Christmas party for children, evening receptions and dances.

A Student Center provides music and TV rooms as well as facilities for ping-pong, group meetings and student offices. A new Student Center, opening in 1965, will provide greatly increased facilities.

Student Accident Insurance—The New Haven College student insurance plan is another important service to our full-time students and their parents. It is designed to help all full-time students of the College meet unexpected and, very often, costly medical bills arising from an accident. The plan provides protection while the student is at home, at school or on vacation, 24 hours a day during the entire school year. It provides for medical, surgical, and hospital benefits to apply against expenses incurred for necessary care beyond that provided by the College Health Service. Benefits under this plan are payable in addition to those the student may have received from any other policy. The cost of this insurance is covered by the Student Activity Fee.

Veterans

New Haven College is approved (by the State Board of Education) for the education of veterans under the provisions of Title 38, United States Code, Veterans' Benefits; Public Law 85-857.

In view of the fact that the full evening program of the College is approximately a half-time program, veterans attending evening classes have approximately twice the time for education for which they are eligible in a full-time program. Those enrolled in a full-time program naturally will be using their eligibility at the full rate.

Change of Program—Veterans Administration regulations do not permit the College to authorize a change of program for a veteran. Changes must be authorized by the Veterans Administration.

Counseling—Although the Veteran Affairs Coordinator is the official designated to handle veterans' problems, other members of the administrative staff are available and prepared to discuss problems with veterans. Appointments may be made at the office of the College.

Library

The library, located adjacent to the main campus, contains approximately 14,000 catalogued volumes in an open-shelf arrangement, with facilities for study and browsing. Subscriptions to more than 170 periodicals and extensive back-issue files are maintained. These materials, while strongest in the specific areas of study in the college curriculum, cover all fields.

The resources of the Free Public Library of New Haven (385,000 volumes) and of the West Haven Public Library (80,000 volumes) are available to all students of the College. For those who are not residents of the respective communities, there is a nominal borrower's charge.

Alumni Association

Membership in the Alumni Association is acquired immediately upon graduation from either the associate or bachelor program. One of the staff officers of the College serves as Alumni Secretary. An Executive Committee conducts the affairs of the Association during the periods between annual meetings and also serves as a planning group. There is a standing committee on annual giving.

In addition to the annual meeting, other meetings of social and educational interest occur during the year.

The Alumni Association is represented on the Board of Governors by the election of a member to the Board for a term of two years. The president of the Association serves on the Board of Governors as an ex-officio member.

Scholastic Regulations

Grading System—The following grading system is in use, and except where otherwise specified, applies both to examinations and to term work. The weight of a final examination grade is a matter individually determined by each instructor.

A	Superior
B	Good
C	Fair
D	Lowest passing grade
F	Failure
Inc.	Incomplete. Indicates that some work remains to be completed. Such work must be made up promptly in order to remove the "incomplete." Otherwise, the "Inc." remains on the student's record, no credit is given for the course and it must be repeated before further work for which it is prerequisite may be taken.

WD	Withdrawal. Indicates either: (1) Withdrawal prior to midpoint of semester, or (2) withdrawal after midpoint of semester and work satisfactory at that time.
WF	Indicates withdrawal after midpoint of semester with unsatisfactory work.
S	Satisfactory. Given only in non-credit courses.
U	Unsatisfactory. Given only in non-credit courses.

Grade Reports—Reports of the final grade in each subject will be mailed to the student soon after the close of each semester. The same report will be mailed to employers in those instances where the student has given his approval. Reports will be mailed to parents or guardians of all students under 21.

Academic Standards—The academic standing of each student will be determined on the basis of his quality point ratio each semester.

During each semester of enrollment in the College, a quality point ratio of 1.5 is required.

Failure to earn the required quality point ratio in any semester will place a student on academic probation for the following semester of enrollment.

Attention is called to the fact that the minimum quality point ratio of 1.5 which is required to remain in good academic standing from semester to semester is insufficient to meet the graduation requirement of a total quality point ratio of 2.0. Therefore, the fact that a student may never have been on probation is no guarantee that he will meet graduation requirements.

In order to determine quality point ratios, each letter grade is assigned a quality point value:

A	4 quality points
B	3 quality points
C	2 quality points
D	1 quality point
F	0 quality points
WF	0 quality points

The quality point ratio for all credit students is obtained by multiplying the quality point value of each grade by the number of semester hours of the course, then dividing the total quality points by the total semester hours.

Removal of Probation or Dismissal for Academic Deficiency—

1. A student who has twice been on probation will be dismissed from the division of the College in which he is enrolled the next time his quality point ratio for any semester falls below the required minimum.

2. A student whose quality point ratio in any one semester is less than 1.0 will be dismissed from the College.

Readmission—Application for readmission after a student has been dismissed, and application for admission following dismissal from another college, will be considered only after the lapse of a semester and only when the student provides evidence which indicates his probable success if readmitted.

Requests for readmission should be submitted in writing to the Dean at least three weeks before the opening of the semester and should include evidence supporting the student's belief that he will succeed if readmitted.

Readmission does not automatically follow; each application is decided individually by the Committee on Academic Standing.

Dean's List—Full-time students who earn a quality point ratio of 3.2, or better, in any one semester will be placed on the Dean's List.

All part-time students who have accumulated a minimum of 14 semester hours at the College will automatically be considered for the Dean's List at the end of each semester. A cumulative quality point ratio of 3.2 or better is required.

Requirements for the Degrees

The Associate and Bachelor degrees will be conferred at Commencement when the student has met *all* the requirements of his program and:

1. Has earned a cumulative quality point ratio of at least 2.0;
2. Has been recommended by the faculty;
3. Has met all financial obligations.

Core Requirements for all Bachelor Programs

All candidates for a Bachelor of Science Degree from New Haven College are required to have credits selected from the following subject areas:

English & Humanities		12 s.h.
Composition I (required of all students)	3	
Speech	3	
Humanities (required of all students)	6	
or		
Literature (may be substituted for 3 s.h. of Humanities)	3	
Technical Report Writing or Comp. and Report Writing	3	
Social Studies & Philosophy		12 s.h.
Sociology	3-6	
Political Science	3-6	
Economics (required of all students)	6	
History	3-6	
Philosophy	3	
Sciences & Mathematics		9 s.h.
Physics	6-8	
Science	3-6	
Chemistry	8	
Biology	3	
Mathematics (3 s.h. of Math. required of all students)	3-6	
Personal Development (Required)		3 s.h.
Psychology	3	
Orientation (Required of all day students)	n.c.	
Physical Education (2 sem.-Required of all day students)	n.c.	
	TOTAL	36 s.h.

Associate in Science Degree with Honors

A degree *With Honors* is awarded to students who have a quality point ratio of 3.25 for the semester hours specifically required for the degree program from which they are being graduated, and who have taken all the required work at this College.

Transfer students will be awarded honors on the same basis, provided however, that their total average will be considered only when they have an honor average for studies completed at this College.

A degree *With High Honors* is awarded to students who have a quality point ratio of 3.50 based on the same considerations as noted above.

In determining eligibility for degrees with honors, credits earned by crediting examinations and electives in excess of those required will not be considered.

Bachelor of Science Degree with Honors

Honors may be conferred upon candidates for graduation who have completed at least 60 semester hours of work at New Haven College in their junior and senior years. The following standards shall be used:

1. The Bachelor's degree *Cum Laude* may be awarded to a student whose cumulative quality point ratio is at least 3.25 at the end of the first semester of his senior year and who continues to attain the same standard for the remainder of the year.

2. The Bachelor's degree *Magna Cum Laude* may be awarded to a student whose cumulative quality point ratio is at least 3.50 at the end of the first semester of his senior year, who continues to attain the same standard for the remainder of the year, whose quality-point ratio in all courses counting toward his major is at least 3.50, and who has completed all the suggested courses within his curriculum.

3. The Bachelor's degree *Summa Cum Laude* may be awarded to a student whose cumulative quality point ratio is at least 3.70 at the end of the first semester of his senior year, who continues to attain the same standard for the remainder of the year, whose quality point ratio in all courses counting toward his major is at least 3.70, and who has completed all the suggested courses within his curriculum.

Transfer Students

Students who have been granted advanced standing for credits earned at another college are required to earn at New Haven College a minimum of eighteen semester hours, twelve of which are in the major, for the Associate in Science degree, and a minimum of thirty semester hours, fifteen of which are in the major, for the Bachelor of Science degree.

Crediting Examinations

The Crediting Examination provides means whereby credit may be established for a course by examination. It is the policy of the College that no student shall be required to take courses which he does not need because of previous experience or education. Since his previous experience or education may have been with a non-accredited institution or agency, or with the armed forces, it is difficult to determine the amount of credit which he should receive toward a New Haven College degree. Therefore, a student may meet course prerequisites and/or establish credit in specific courses by passing successfully a Crediting Examination in each of the courses in which he feels qualified.

Students desiring to undertake a Crediting Examination should first discuss the matter with the Department Chairman of the subject matter involved. If it is agreed that the examination is feasible, an application accompanied by a fee of fifteen dollars should be submitted. The examination is then arranged.

A Crediting Examination normally will consist of a three to four-hour written and a one-hour oral examination.

At least one year's successful study must be completed at the College before credit awarded by examination will be granted officially.

Registration

Degree and Non-Degree Students—There are two parts to registration: the completion of the registration forms and the payment of tuition. Both should be completed before the closing date of registration as stated in the calendar. There is a penalty fee for delaying either of these two processes beyond the closing date of registration.

Registration is possible within office hours during the registration dates stated in the calendar.

Registering must be in person at the College office. Forms are not mailed to students.

A separate registration is required for each of the semesters and for the summer session.

Changes of Registration and Schedules

Students are urged to plan their programs carefully before completing the registration forms in order to avoid the need for requesting changes. Once the registration has been completed, the student is charged the Change of Registration Fee for each request for change which he makes. The fee is charged whether or not the request is granted, and is payable when the student completes the form requesting the change. There is no Registration Change Fee charged, however, for a request to add a course.

Course Revisions

The College reserves the right to change, delete, or add courses, without notice, as circumstances may require.

Attendance Regulations

Classes are operated on the policy that it is necessary for all students to attend all class meetings. If a class is missed, the benefits from participation in the class discussion and instruction are completely lost. No student, regardless of ability, can afford that loss.

Evening Credit Programs—A student is allowed only two absences per semester for a 3-or-4 semester hour course. If the student is absent more than twice, permission to continue in the course must be obtained from the instructor.

Day Credit Programs—Attendance regulations for daytime students are outlined in the Student Handbook.

The Cooperative Plan

Coordinator: GEORGE A. SCHAEFER

The Cooperative Plan is defined as an integration of classroom work and practical industrial experience. It is an organized program under which students alternate periods of attendance at college with periods of employment in industry and business. The employment constitutes a regular, continuing and essential element in the educational process.

The student maintains his formal connections with the College during employment periods. However, he is obligated to adjust himself to the daily routine of the firm to which he is assigned and to observe all of the firm's rules and regulations.

Application for participation in the plan is usually restricted to students having completed their Freshman year. Specific information regarding the plan may be obtained by contacting the Coordinator.

The Summer Sessions of the Day and Evening Credit Divisions

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The College offers summer sessions with these primary functions:

1. To offer opportunity for summer study to those residents of the New Haven area who attend other schools during the regular school year. For financial reasons, most of these students find it desirable to live at home and work during the summer. The summer program of the College is offered in both the Day and Evening Divisions. Reasons for summer study vary, but are generally confined to the following:
    a. To make up deficiencies.
    b. To satisfy prerequisities for courses in the parent institution.
    c. To acquire advanced standing in the parent school.

    Experience has shown that the credits earned at the College are acceptable to parent institutions. The College is a member of the New England Association of Colleges and Secondary Schools. For additional assurance of the acceptance of credit by the parent school, prior approval by that school is advisable.

2. To provide opportunity for summer study to the students of the College. Reasons for summer study for this group of students may be described as follows:
    a. To lighten the study load during the regular school year, but still meet the yearly requirements of the program.
    b. To shorten the normal time required for a degree.
    c. To take preparatory work.
    d. To make up deficiencies caused by failure in certain courses.
    e. To take additional work beyond the degree requirements and yet complete a program within the normal time.

Note: The accomplishment of any one of the five objectives listed above will depend on the specific subjects offered during any summer session.

Registration—For all new students a personal interview with a staff member of the College is necessary. Registration procedures will be explained at this time. For those new students who desire work for credit in other institutions, prior approval should be obtained from those institutions (see 1 above). This procedure should be followed each semester regardless of previous attendance.

Tuition and Fees

Day Division: Regular Academic Year

Application fee—payable only once at the initial time of application. Not refundable	$10.00
Acceptance fee—for incoming full-time freshmen and transfer students—payable upon notification of acceptance and credited to first semester tuition. Not refundable.	25.00
Tuition — 12-18 (19 where specified in program) credit hours or equivalent, each semester, per semester	375.00
Less than 12 credit hours or equivalent, each semester, per credit hour	30.00
More than 18 credit hours or equivalent, each semester, per credit hour	30.00
Student activity fee — each semester	25.00
Covers subscription to College newspaper, student accident insurance, admission to home athletic events, use of Student Center and helps defray cost of student activities and facilities.	
Change of registration—assessed for changing courses or sections after formal registration	5.00

Evening Division: Regular Academic Year

Application fee—payable only once at the initial time of application. Not refundable	10.00
Tuition—per credit hour or equivalent	22.00
Student activity fee—per 3 credit hours or equivalent	2.00
Covers subscription to College newspaper, use of Student Center, and helps to defray cost of all student activities and facilities.	
Change of registration—assessed for changing courses or sections after formal registration	3.00

Summer Terms

Application fee—payable only once at the initial time of application. Not refundable	10.00
Tuition: Day Division—per credit hour or equivalent	30.00
Full Program, 15-18 hours (19 for Engineers)	375.00
Evening Division—per credit hour or equivalent	22.00
Student activity fee—per 3 credit hours or equivalent	2.00

Other Charges

Late registration—Assessed for failure to complete registration and/or payment of fees before closing date of registration. Not refundable	5.00
Laboratory and Breakage fees—payable each semester by students registering for courses requring the laboratory fee. See Course Description for specific amounts.	
Make-up Examination—Assessed when a student is permitted to take an end-of-semester examination at other than the scheduled time except for conflicts caused by the examination schedule.	5.00

Make-up Test—Assessed when a student is permitted to make up an announced test during the semester.	3.00
Auditors—The fee for a student auditor in any course or courses is the same as if the courses are taken for credit.	
Graduation fee—Assessed regardless of participation in exercises and due before April 1st of year of graduation. Not refundable.	25.00
Credit Examination—Charge per semester hour of credit	5.00
Transcript of academic work—No charge for the first one; thereafter, per copy	1.00

Payment of Bills

Tuition, fees, and other college charges are payable at time of registration. Payment made by check or money order should be made payable to New Haven College.

Day Division: The College does not provide any deferred payment plan for full-time students. Tuition loan plans are available at many commercial banks for those who wish to spread their payments over a period of time.

Evening Division: Those students carrying 6 or more credit hours or the equivalent, who wish to make their payments in installments, should contact the Business Office for details.

Summer Terms: Because of the short duration of the summer terms, the total amount due for tuition and fees is due and payable at time of registration for each term.

Failure to Pay

The College withholds the giving of grades, the issuance of transcripts, and the granting of honorable dismissal to any student whose account is in arrears.

Withdrawal

Students are required to notify the Registrar's Office of the withdrawal from any course or complete withdrawal from College. Forms are provided at the reception desk for this purpose. If a student is prevented by illness or distance from obtaining such a form, he should address a letter to the Registrar indicating courses to be dropped and reason for such action.

The College requires the written consent of a parent or guardian of any full time student under 21 who wishes to withdraw completely from College.

Refund of Tuition

Registration does not carry with it the right of a refund of tuition in cases of withdrawal. No deduction is made for temporary absence from classes nor is any refund made if a student is suspended or dismissed.

A. Full-time students — No refunds are granted to any student who voluntarily withdraws from the College. In certain cases of involuntary withdrawal, some refund, of tuition only, may be made, the exact amount of which is determined by the College. These cases are limited to instances of involuntary withdrawal involving:

(1) the death of, or protracted serious illness of a student; or

(2) involuntary induction into military service.

All requests in cases of the above must be in writing and must be documented.

The date of the request for withdrawal will serve as the basis for computing any refund.

B. Part-time students—Tuition is refunded or cancelled by one of two methods upon receipt of formal withdrawal request:

1. Percentage basis for any reason before or during the first four weeks of the semester.

   80% of semester tuition before or during first week
   60% " " " " " " second week
   40% " " " " " " third week
   20% " " " " " " fourth week
   0% " " " after fourth week

2. Pro-rata basis of tuition involving:
   (a) death or protracted serious illness of a student
   (b) involuntary induction into military service
   (c) transfer or change in work initiated by employer that precludes meeting class schedules.

N.B. All requests for refunds must be made in writing and include necessary documentation.

The College assumes no responsibility beyond the foregoing for withdrawal occasioned by the pressures of family life or occupation.

C. Summer session students—In cases of withdrawal from a course or courses within the first week of each term, a refund of 50% of tuition plus all fees is made. There is no refund of summer tuition after the first week.

The foregoing policy is intended to protect the College, since the College plans its expenses and bases its budget upon full collection of tuition and fees from all registered students, and assumes the obligation of supplying instruction and other services throughout the year.

NEW HAVEN COLLEGE

Day Credit Division

OFFERING THE DEGREE
ASSOCIATE IN SCIENCE in:

Arts & Science—with Majors in:
- *General Studies*
- *Commercial & Advertising Art*
- *Journalism & Public Relations*

Business Administration
Engineering
Chemistry
Physics
Mathematics

OFFERING THE DEGREE
BACHELOR OF SCIENCE in:

Business Administration—
with Majors in:
- *Accounting*
- *General Business Administration*
- *Industrial Administration*
  - *General Option*
  - *Computer Option*
- *Marketing*
- *Public & Social Administration*

Electrical Engineering
Industrial Engineering
Mechanical Engineering

New Haven College, 1964-1965

Day Credit Division

CALENDAR

Summer Session 1964

		1964
Placement Examinations:		
English examinations	Tuesday, 7:00 p.m.	June 2
Scholastic Aptitude examination	Wednesday, 7:00 p.m.	June 3
Mathematics examination	Wednesday, 8:15 p.m.	June 3
Registration period	Tuesday-Wednesday	June 9-10
Tuition due on or before	Wednesday	June 10
Classes begin	Wednesday	June 17
Holiday	Friday	July 3
First Term final examinations	Friday	July 24
Second Term classes begin	Monday	July 27
Second Term final examinations	Monday	August 31

Fall Semester 1964

Placement Examinations:		
English examinations	Tuesday, 7:00 a.m.	August 18
Scholastic Aptitude examination	Thursday, 7:00 p.m.	August 20
Mathematics examination	Thursday, 8:15 p.m.	August 20
Placement Examinations:		
English examinations	Wednesday, 7:00 p.m.	September 2
Scholastic Aptitude examination	Thursday, 7:00 p.m.	September 3
Mathematics examination	Thursday, 8:15 p.m.	September 3
Labor Day (holiday)	Monday	September 7
Sophomore class registration	Wednesday, 9:00 a.m.	September 9
Junior-Senior class registration	Thursday, 9:00 a.m.	September 10
Transfer student registration	Thursday, 1:00 p.m.	September 10
Upper-class students, tuition due	Thursday	September 10
First-year student registration	Friday	September 11
First-year students tuition due	Friday	September 11
Orientation first-year students	Monday	September 14
Classes begin	Tuesday	September 15
Thanksgiving (holiday)	Thursday-Friday	November 26-27
Christmas recess	Saturday-Sunday	December 19-January 3
		1965
Classes resume	Monday	January 4
Last day of classes	Tuesday	January 12
Final examinations	Wednesday-Tuesday	January 13-19
Recess	Wednesday-Wednesday	January 20-27

SPRING SEMESTER 1965

Upper-class students, tuition due	Wednesday	January 20
Orientation and Registration of new students, tuition due	Tuesday	January 26
Classes begin	Thursday	January 28
Spring recess	Saturday-Sunday	March 20-28
Classes resume	Monday	March 29
Good Friday (holiday)	Friday	April 16
Last day of classes	Wednesday	May 19
Final examinations	Thursday-Thursday	May 20-27
Holiday	Monday	May 31
Commencement	Sunday	June 13

SUMMER SESSION 1965

Placement Examinations:		1965
English examinations	Wednesday, 7:00 p.m.	June 2
Scholastic Aptitude examination	Thursday, 7:00 p.m.	June 3
Mathematics examination	Thursday, 7:00 p.m.	June 3
Registration period	Tuesday-Wednesday	June 8-9
Tuition due on or before	Wednesday	June 9
Classes begin	Wednesday	June 16
Holiday	Monday	July 5
First term final examinations	Friday	July 23
Second term classes begin	Monday	July 26
Second term final examinations	Monday	August 30

Admission Procedure—Day Division

1. Call the College for information and, if possible, arrange for a pre-application interview. (934-6321)
2. Complete an application furnished by the Admissions Office, which form contains:
   a. Personal information
   b. Secondary Education Form—to be sent by student to the high school for completion and for mailing back to New Haven College
3. An application fee of $10.00 must accompany the application. This fee is not refundable.
4. All students within college training will take the admission tests including Scholastic Aptitude, Mechanics of English, Reading Comprehension, and Mathematics.

College Entrance Examination Board results, if satisfactory, are accepted in place of the New Haven College admission examinations. When all information has been received and the admissions tests completed, or College Entrance Examination Board results have been received and accepted, the applicant will be notified with regard to his admission.

5. When the student has been notified that the conditions for admission have been met, he should mail a tuition deposit of twenty-five dollars ($25.00) to be credited on his first-term bill. This deposit is a reservation for a place in the class and cannot be refunded if the student fails to enter at the expected time.

NEW HAVEN COLLEGE

Arts & Science

OFFERING THE DEGREE OF ASSOCIATE IN SCIENCE

with majors in:
- *General Studies*
- *Commercial & Advertising Art*
- *Journalism & Public Relations*

Arts & Science

Stephen J. Bennett, Dean of Faculty

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Aims and Objectives

The Arts & Science Program offers a two-year college curriculum leading to an Associate in Science degree upon completion. Although primarily a terminal program, most courses will transfer upon completion, should the student wish to continue for a bachelor's degree.

This program offers a choice of majors to give the students a degree of concentration in fields in which we feel there will be more and more employment opportunities, for both men and women, throughout the nation. The three majors offered are: General Studies, Commercial & Advertising Art, and Journalism & Public Relations.

General Studies: This major is offered for those students who wish a college degree of a general nature and for those students who have not yet decided upon a field of specialization but who, in the meantime, want to start college work.

Commercial and Advertising Art: This major is offered for both women and men who wish to obtain employment in a vast and challenging field used extensively by all graphic media, i.e., newspapers, magazines, brochures, "house organs," indoor and outdoor advertising displays, etc. In addition, this major is planned to help develop the artistic talent of those students who are interested in art training to be used in other professions.

Journalism and Public Relations: This major is offered for both women and men who wish to obtain employment in the closely related, and ever expanding, fields of journalism and public relations, and for those who wish to use journalistic training in other professions. Students taking this major will have an opportunity to work on the staff of the College student publications.

Admission Requirements

An applicant for admission to the Arts & Science Program must be a graduate of an approved secondary school. While no set program of high school subjects is prescribed, an applicant must meet the standards of the College in respect to the high school average and present 15 acceptable units of satisfactory work, including 9 or more units of college preparatory subjects. Satisfactory scores on College Entrance Examination Board tests or New Haven College admission tests are required.

TWO-YEAR ASSOCIATE IN SCIENCE PROGRAM

Major in General Studies

FIRST YEAR

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
E 107	Speech	3	E 206	Eng. Comp. & Literature	3
E 113	English Composition	3	P 111	Psychology	3
O 111	Orientation	0	PE 112	Physical Education II	0
PE 111	Physical Education I	0	SS 113	Sociology	3
SS 121	Political Science	3		Foreign Language *or* History	3
	Foreign Language *or* History	3		*Electives	3-6
	*Electives	3-6			
		15-18			15-18

SECOND YEAR

	Foreign Language *or* History	3		Foreign Language *or* History	3
EC 101	The American Economy	3		Philosophy, Music *or* Modern Art	3
E 211	Major British Writers	3	E 202	Humanities	3
E 201	Humanities	3	E 212	Major British Writers II	3
	Science *or* Math.	3		Science *or* Math.	3
	*Elective	3		*Elective	3
		15-18			15-18

* Students planning for a B.S. degree should elect 6 additional hours of science.

The student is expected to carry 15 credit hours per semester. A total of 60 semester hours is required for the degree.

Major in Commercial & Advertising Art

FIRST YEAR

	Fall			*Spring*	
ART 101	Drawing & Painting	3	ART 102	Drawing & Painting	3
ART 111	Design	3	ART 112	Design	3
E 107	Speech	3	E 206	Eng. Comp. & Literature	3
E 113	English Composition	3	P 111	Psychology	3
O 111	Orientation	0	PE 112	Physical Education II	0
PE 111	Physical Education I	0	SS 113	Sociology	3
SS 121	Political Science	3		Elective	3
	Elective	3			
		15-18			15-18

SECOND YEAR

ART 211	Lettering	3	ART 122	Layout & Print. Tech.	3
BA 107	Prin. of Advertising	3	ART 131	Modern Art	3
EC 101	The American Economy	3	E 202	Humanities	3
E 201	Humanities	3		Science *or* Math.	3
	Science *or* Math.	3		Electives	3-6
	Elective	3			
		15-18			15-18

The student is expected to carry 15 credit hours per semester. A total of 60 semester hours is required for the degree.

Major in Journalism & Public Relations

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
		FIRST YEAR			
E 107	Speech	3	BA 131	Public Relations	3
E 113	English Composition	3	J 201	News Writing & Reporting	3
J 101	Journalism	3	P 111	Psychology	3
O 111	Orientation	0	PE 112	Physical Education II	0
PE 111	Physical Education I	0	SS 113	Sociology	3
SS 121	Political Science	3		History	3
	History	3		Elective	3
	Elective	3			15-18
		15-18			
		SECOND YEAR			
BA 104	Advertising	3	ART 122	Layout & Print. Tech.	3
EC 101	The American Economy	3	E 202	Humanities	3
E 201	Humanities	3	E 220	Technical Report Writing	3
J 301	Advanced Journalism & Feature Writing	3		Science *or* Math.	3
	Science *or* Math.	3		Electives	3-6
	Elective	3			15-18
		15-18			

The student is expected to carry 15 credit hours per semester. A total of 60 semester hours is required for the degree. The student majoring in Journalism & Public Relations should be able to type.

NEW HAVEN COLLEGE

Business Administration

OFFERING THE DEGREE OF ASSOCIATE IN SCIENCE in:

- *Business Administration*

OFFERING THE DEGREE OF BACHELOR OF SCIENCE in:

- *Business Administration — with Majors in:*
  - *Accounting*
  - *Business Administration*
  - *Industrial Administration*
    - *General Option*
    - *Computer Option*
  - *Marketing*
  - *Public & Social Administration*

Business Administration

William G. Holman, Chairman

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Aims and Objectives

Business and industry today require trained people with a broad background, not only in the required technical subjects but also in the equally important social and liberal studies. To equip them for responsible positions in these fields, there is first the basic two-year program in general business administration. This may be terminal or the foundation for the bachelor program which provides five specialized fields of study.

Associate in Science Program: This two-year program lays the groundwork in business principles and practices and supplies the necessary supporting courses in the liberal arts. Included are basic courses in economics, accounting, marketing, finance, management, and the effects of government and law on business.

Two-year graduates receive the degree of Associate in Science in Business Administration. Since it is the first two years of the bachelor program, the student may be qualified to continue for that degree, specializing as his chosen career demands.

Bachelor of Science Program: Since future success depends much more today on a higher degree of specialized knowledge in some one of the fields of business, there is opportunity for advanced studies in five fields in the second two years of this program. Majors offered are: Accounting, Business Administration, Industrial Administration, Marketing, and Public and Social Administration.

Accounting: The specialized academic training in this major is planned for those wishing to enter on careers in public accounting; federal, state, and local government accounting divisions; business accounting, cost accounting, and auditing; or in their own businesses. A minimum of 27 hours of specialized work in accounting is required.

Business Administration: This major provides the student with a complete well-rounded program in business management. Besides the basic courses required in all majors, a selection of advanced business courses and desired electives is provided for those wishing a degree of specialization in any given area.

Industrial Administration: This program is planned to provide the student with a broad background in the specialized area of industry. It is designed to prepare him to meet the demands on administrators and managers in today's industry.

In addition to the general Industrial Administration major, a Computer Option is also offered. While this program is a general management program with full emphasis on the factors of industrial management, it also contains the core courses in computer technology. Included are the selection, programming, and uses of the computer, with practical laboratory work using a modern computer.

The Industrial Administration Major in the Business Administration Program may be taken under the Cooperative Plan of Work and Study.

Marketing: The objective of this major is to give the student an understanding of the structure of the marketing institution and an appreciation of marketing practices, techniques and policies. The curriculum is broad and inclusive, to permit entry into a number of areas of employment. The managerial approach given in the courses enables the student to enter and pursue successfully the managerial training programs offered by the larger companies to graduates with a bachelor degree.

Public & Social Administration: This new major is designed for students who wish to prepare for administrative or research positions in governmental or private agencies in the general fields of public health, social welfare, urban redevelopment, and labor. In addition to equipping the student with both the basic knowledge and skills for these areas, a sound preparation will be afforded students who may subsequently desire to do graduate work in those fields.

Admission Requirements

An applicant for admission to the Business Administration Programs should be a graduate of an approved secondary school. While no set program of high school subjects is prescribed, an applicant must meet the standards of the College in respect to the high school average and present 15 acceptable units of satisfactory work, including 9 or more units (4 in English) of college preparatory subjects. Satisfactory scores on College Entrance Examination Board Tests or New Haven College admission tests are required.

Matriculation for Bachelor's Degree: Students who have completed at least three semesters or equivalent (45 academic credit hours) with a minimum quality point average of 2.00 may apply for matriculation for the Bachelor's Degree.

Admission will be limited to applicants who have given evidence of capacity and motivation adequate for upper division work as determined by the Department Chairman.

A cumulative quality point ratio of at least 2.0 is required in a Bachelor of Science student's major field.

Course Sequences

The following sequences of courses are required of all freshmen and sophomores. No substitutions for the specific courses required will be allowed without the approval of the chairman of the department.

ASSOCIATE IN SCIENCE IN BUSINESS ADMINISTRATION

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
		FRESHMAN YEAR			
BA 101	Business Law	3	BA 102	Business Law	3
E 113	English Composition	3	BA 118	Business Mathematics	3
E 107	Speech	3	EC 101	American Economy	3
IE 114	Management Survey	3	E 206	Eng. Comp. & Literature	3
M 109	*General Mathematics	3	P 111	Psychology	3
O 111	Orientation	0	PE 112	Physical Education II	0
PE 111	Physical Education I	0		Elective	3
	Elective	3			
		15-18			15-18

* M 109 may be waived by entrance examination and an elective substituted.

SOPHOMORE YEAR

(Cooperative Plan Scheduling Permitted)

	Fall or 3rd Term			*Spring or 4th Term*	
A 111	Introductory Accounting	3	A 112	Introductory Accounting	3
BA 105	Prin. of Marketing	3	BA 106	Prin. of Selling	3
E 201	Humanities	3	E 202	Humanities	3
EC 133	Prin. of Economics	3	EC 134	Prin. of Economics	3
SS 121	Political Science	3	SS 113	Sociology	3
	Elective	3	SS 122	Political Science	3
		15-18			18

TOTAL — Associate in Science Degree in Business Administration: 63 Semester Hours.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

Accounting Major

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
	THIRD YEAR				
A 221	Intermediate Accounting	3	A 222	Intermediate Accounting	3
A 223	Cost Accounting	3	A 224	Cost Accounting	3
	Science	3		Science	3
BA 113	Business Finance	3	BA 214	Public Finance	3
PS 223	Personnel Administration	3	PHL 111	Intro. to Prob. of Phil.	3
	Elective	3	PS 224	Mgmt.-Labor Relations	3
		15-18			18
	FOURTH YEAR				
A 341	Advanced Accounting	3	A 342	Income Tax Procedure	3
A 443	Accounting Systems	3	A 338	Auditing	3
BA 216	Business Statistics	3	BA 512	Business Seminar	3
EC 211	Govt. Reg. of Business	3	EC 236	Money & Banking	3
	Electives	3-6		Electives	3-6
		12-18			12-18

Electives totaling at least 6 semester hours are required in addition to the 120 semester hours of specific course requirements. See recommendations below for the selection of electives for all Business Administration students.

TOTAL — Bachelor of Science Degree: 126 Semester Hours.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

Business Administration Major

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
	THIRD YEAR				
BA 203	Prin. of Transportation	3	BA 312	International Marketing	3
	Science	3		Science	3
BA 113	Business Finance	3	BA 214	Public Finance	3
PS 223	Personnel Administration	3	PHL 111	Intro. to Prob. of Phil.	3
	Electives	3-6	PS 244	Mgmt.-Labor Relations	3
		12-18		Elective	3
					15-18

Fourth Year

BA 216	Business Statistics	3	BA 512	Business Seminar	3
EC 211	Govt. Reg. of Business	3	EC 236	Money & Banking	3
EC 442	Economic Thought	3	EC 445	Economic Analysis	3
	Electives	3-9		Electives	3-9
		9-18			9-18

Electives totaling at least 18 semester hours are required in addition to the 108 semester hours of specific course requirements. See recommendation below for the selection of electives for all Business Administration students.

TOTAL — Bachelor of Science Degree: 126 Semester Hours.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

Industrial Administration Major

General Option

(Cooperative Plan Scheduling Permitted)

	Fall or 5th Term	*Sem. Hrs.*		*Spring or 6th Term*	*Sem. Hrs.*
	Third Year				
BA 113	Business Finance	3	IE 342	Work Measurement	3
EC 240	Labor Economics	3	PHL 111	Intro. to Prob. of Phil.	3
IE 241	Methods & Motion Study	3		Science	3
	Science	3	PS 244	Mgmt.-Labor Relations	3
PS 223	Personnel Administration	3		Electives	3-6
	Elective	3			12-18
		15-18			

Fourth Year

	Fall or 7th Term			*Spring or 8th Term*	
BA 216	Business Statistics	3	BA 512	Business Seminar	3
EC 211	Govt. Reg. of Business	3	BA 302	Industrial Marketing	3
EM 124	Mechanical Processes	3	IE 234	Production Control	3
IE 233	Cost Control	3		Electives	3-9
PS 225	Human Rel. in Industry	3			9-18
	Elective	3			
		15-18			

Electives totaling at least 12 semester hours are required in addition to the 114 semester hours of specific course requirements. See recommendation below for the selection of electives for all Business Administration students.

TOTAL — Bachelor of Science Degree: 126 Semester Hours.

Industrial Administration Major

Computer Option

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
	Third Year				
BA 113	Business Finance	3	IE 224	Programming	3
IE 221	Data Processing	3	M 228	Math. for Computers II	3
	Science	3	PHL 111	Intro. to Prob. of Phil.	3
M 227	Math. for Computers I	3		Science	3
PS 223	Personnel Administration	3	PS 224	Mgmt.-Labor Relations	3
	Elective	3		Elective	3
		15-18			15-18

Fourth Year

BA 216	Business Statistics	3	BA 512	Business Seminar	3
EC 240	Labor Economics	3	EC 445	Economic Analysis	3
IE 233	Cost Control	3	IE 234	Production Control	3
IE 507	Systems Analysis	3	IE 502	Operations Research	3
	Electives	3-6	IE 510	Business Games	3
				Elective	3
		12-18			15-18

Electives totaling at least 6 semester hours are required in addition to the 120 semester hours of specific course requirements. See recommendations below for the selection of electives for all Business Administration students.

TOTAL — Bachelor of Science Degree: 126 Semester Hours.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

Marketing Major

Third Year

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
BA 216	Business Statistics	3	BA 302	Industrial Marketing	3
BA 301	Retailing	3	BA 108	Advertising Management	3
BA 107	Prin. of Advertising	3	PHL 111	Intro. to Prob. of Phil.	3
PS 223	Personnel Administration	3		Science	3
	Science	3		Electives	3-6
	Elective	3			12-18
		15-18			

Fourth Year

BA 315	Marketing Management	3	BA 316	Sales Management	3
BA 342	Marketing Research	3	BA 312	International Marketing	3
P 211	Social Psychology	3	BA 512	Business Seminar	3
	Electives	3-9	BA 131	Public Relations	3
		9-18		Electives	3-6
					12-18

Electives totaling at least 15 semester hours are required in addition to the 111 semester hours of specific course requirements. See recommendation below for the selection of electives for all Business Administration students.

TOTAL — Bachelor of Science Degree: 126 Semester Hours.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION

Public & Social Administration Major

Third Year

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
BA 113	Business Finance	3	BA 214	Public Finance	3
EC 240	Labor Economics	3	PS 244	Mgmt.-Labor Relations	3
PS 223	Personnel Administration	3	SS 216	Municipal Government	3
SA 101	Prin. of Public Admin.	3		Science	3
	Science	3		Electives	3-6
	Elective	3			12-18
		15-18			

FOURTH YEAR

EC 211	Govt. Reg. of Business 3		BA 512	Business Seminar	3
P 211	Social Psychology	3	P 212	Bus. & Industrial Psych.	3
PS 225	Human Rel. in Industry ..	3	SA 202	Social Administration II ..	3
SA 201	Social Administration I	3	SS 202	History of the U.S. II	3
SS 201	History of the U.S. I	3	SS 302	The U.S. Constitution	3
	Elective	3		Elective	3
		15-18			15-18

Electives totaling at least 6 semester hours are required in addition to the 120 semester hours of specific course requirements. See recommendation below for the selection of electives for all Business Administration students.

TOTAL — Bachelor of Science Degree: 126 Semester Hours.

Selection of Electives

(Bachelor of Science Candidates)

It is recommended that Business Administration students select their electives from related fields, such as Accounting, Business Administration, Economics, Personnel Supervision, Social Administration, Psychology, Mathematics for Computers, and applicable courses in Industrial and Mechanical Engineering.

NEW HAVEN COLLEGE

Engineering

OFFERING THE DEGREES OF
ASSOCIATE IN SCIENCE in:

- *Engineering*
- *Chemistry*
- *Physics*
- *Mathematics*

BACHELOR OF SCIENCE in:

- *Electrical Engineering*
- *Industrial Engineering*
- *Mechanical Engineering*

Engineering

Oscar L. Gross, Chairman, Department of Electrical Engineering
Joseph J. Arnold, Chairman, Department of Industrial Engineering
Thomas C. Warner, Jr., Chairman, Department of Mechanical Engineering

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Aims and Objectives

The College offers a two-year program in engineering, chemistry, physics and mathematics, and four-year curricula in Electrical, Industrial and Mechanical Engineering.

Engineering: Two-Year Associate in Science Program: This program provides students with the typical two-year college engineering curriculum of a standard four-year program. It enables the young man or woman to live at home, thus eliminating the on-campus expenses of room and board. Since New Haven College courses are accredited, the student will be in a position to transfer with advanced standing to the four-year program, to the Evening Credit Division of the College, or to another institution. Upon satisfactory completion of the prescribed two-year curriculum, graduates will receive the Associate in Science degree.

Chemistry: Two-Year Associate in Science Program: This program provides the student with a background in industry, research and teaching. The chemistry major is a basic program covering three areas—general inorganic chemistry, quantitative analysis and organic chemistry. Also included are related courses in physics, biology and mathematics. Upon satisfactory completion of the prescribed two-year curriculum, graduates will receive the Associate in Science degree.

Physics: Two-Year Associate in Science Program: This major provides the student with a background in a science that is increasingly important in modern scientific developments. It is a valuable program for those desiring technical employment or for those preparing for careers in various professional fields. Upon satisfactory completion of the prescribed two-year curriculum, graduates will receive the Associate in Science degree.

Mathematics: Two-Year Associate in Science Program: This program provides a background in the field of mathematics. The demand for trained mathematicians is increasing rapidly. The major offers a professional junior college program for use in government scientific research, education, industry and allied fields. It includes two full years of higher mathematics and liberal arts subjects. Upon satisfactory completion of the prescribed two-year curriculum, graduates will receive the Associate in Science degree.

Electrical Engineering: Bachelor of Science Program: This program is planned to give students a sound foundation for a professional career in the utilization of electricity in the modern industrial world and in the fields of experimental science and technology. The training includes not only mathematics, mechanics, physics and chemistry, but also economics, engineering law, and other liberal subjects. The student becomes familiar with the calculation of circuits of electric, magnetic and dielectric types, theory of generators, motors, magnets and other apparatus, electrical transmission of energy, automation, semi-conductors, electronic computers, information theory, microwaves, and related subjects. A great future is open in research in varied areas including the concentrated application of engineering principles to improved productivity and reduction in human drudgery. Upon satisfactory completion of the prescribed four-year curriculum, graduating students receive the Bachelor of Science degree in Electrical Engineering.

Industrial Engineering: Bachelor of Science Program: The study of Industrial Engineering prepares a student for a successful career in the manufacturing, research and service industries. Based as it is on a broad engineering background, the professional courses taken in the last two years offer a perspective which enables the graduate to cope with complex problem situations encountered in modern industry. Special attention is given in this program to preparing the student for the intelligent use of computers in modern industrial practice. Upon satisfactory completion of the prescribed four-year curriculum, graduates will receive the Bachelor of Science degree in Industrial Engineering.

Mechanical Engineering: Bachelor of Science Program: The tremendously broad field of mechanical engineering requires a common core of fundamental knowledge which is covered in the courses in Mechanical Engineering. Thermodynamics, Heat Transfer, Fluid Mechanics, Dynamics and Vibrations, Machine Design and extensive laboratory work are typical elements of this core. Sufficient latitude is granted for the student to include several related courses of his own choosing in his junior and senior years. Special attention is given to developing the student's ability to analyze, design and prove by testing techniques in various mechanical applications. Upon satisfactory completion of the prescribed four-year curriculum, graduates will receive the Bachelor of Science degree in Mechanical Engineering.

Admission Requirements

1. An applicant for admission to the programs in this section of the catalog should be a graduate of a secondary school of approved standing and should present 15 acceptable units of secondary school work. These should include 4 units of English, 2 units of algebra, 1 of plane geometry, ½ of trigonometry, and 1 unit each of physics and a second science.

Deficiences in English, mathematics, and/or science may be satisfied by summer school attendance, or by an extension of the stated curriculum by the addition of one or two semesters chosen to fit the student's need.

2. Satisfactory placement in tests covering scholastic aptitude, mathematics, and English, as given by the College Entrance Examination Board or New Haven College, is required.

Matriculation for Bachelor's Degree: Students who have completed at least three semesters or equivalent (45 academic credit hours) with a minimum quality point average of 2.00 may apply for matriculation for the Bachelor's Degree.

Admission will be limited to applicants who have given evidence of capacity and motivation adequate for upper division work as determined by the Department Chairman.

A cumulative quality point ratio of at least 2.0 is required in a Bachelor of Science student's major field.

TWO-YEAR ASSOCIATE IN SCIENCE PROGRAMS

ENGINEERING

	Fall	*Sem. Hrs.*	*Lab.*	*Class Hrs.*		*Spring*	*Sem. Hrs.*	*Lab.*	*Class Hrs.*
				First Year					
CH 101	Gen. Chem. w/Lab.	4	3	3	CH 102	Gen. Chem. w/Lab.	4	3	3
E 113	English Comp.	3	0	3	E 201	Humanities	3	0	3
EM 101	Engr. Drawing	2	4	0	EM 102	Drwg. & Desc. Geom.	2	4	0
P 111	Psychology	3	0	3	M 102	Calculus II	4	0	4
M 101	College Alg. & Cal. I	4	0	4	PH 106	Analytical Physics I	4	3	3
O 101	Intro. to Engr.	0	0	1	PE 112	Physical Ed. II	0	2	0
PE 111	Physical Ed. I	0	2	0					
		16	9	14			17	12	13
				Second Year					
E 202	Humanities	3	0	3	EC 133	Prin. of Economics	3	0	3
EE 223	Prin. of Elect. Engr.	3	0	3	E 220	Tech. Report Writ.	3	0	3
EM 221	Mechanics-Statics	3	0	3	EE 224	Prin. of Elect. Engr.	3	0	3
M 201	Calculus III	4	0	4	EM 322	Mechanics-Dynamics	3	0	3
PH 205	Analyt. Physics w/Lab.	4	3	3	M 202	Diff. Equations	3	0	3
		17	3	16	PH 206	Analyt. Physics w/Lab.	4	3	3
							19	3	18

TOTAL — Associate in Science Degree in Engineering: 69 Semester Hours.

CHEMISTRY

	Fall	*Sem. Hrs.*	*Lab.*	*Class Hrs.*		*Spring*	*Sem. Hrs.*	*Lab.*	*Class Hrs.*
				First Year					
CH 101	Gen. Chem. w/Lab.	4	3	3	CH 102	Gen. Chem. w/Lab.	4	3	4
GR 101	Elementary German or Elective	3	0	3	GR 102	Elementary German or Elective	3	0	3
E 113	English Comp.	3	0	3	E 201	Humanities	3	0	3
P 111	Psychology	3	0	3	PH 106	Anal. Phys. w/lab.	4	3	3
M 101	College Algebra & Calculus I	4	0	4	M 102	Calculus II	4	0	4
O 111 O 101	Orientation *or* Intro. to Engr.	0	0	1	PE 112	Physical Ed. II	0	0	2
PE 111	Physical Ed. I	0	0	2			18	6	19
		17	3	19					

SECOND YEAR

CH 301	Organic Chem. w/lab.	4	3	3	GR 201	Inter. German *or* Elective	3	0	3
M 201	Calculus III	4	0	4	CH 212	Quant. Anal. w/lab.	4	3	3
PH 205	Anal. Phys. w/lab.	4	3	3	CH 302	Organic Chem. w/lab.	4	3	3
GR 201	Inter. German *or* Elective	3	0	3	E 202	Humanities	3	0	3
CH 211	Quant. Anal. w/lab.	4	3	3	PH 206	Anal. Phys. w/lab.	4	3	3
		19	9	16			15-18	9	15

TOTAL — Associate in Science Degree in Chemistry: 69 Semester Hours.

PHYSICS

FIRST YEAR

	Fall	*Sem. Hrs.*	*Lab.*	*Class Hrs.*		*Spring*	*Sem. Hrs.*	*Lab.*	*Class Hrs.*
CH 101	Gen. Chem. w/lab.	4	3	3	CH 102	Gen. Chem. w/lab.	4	3	4
GR 101	Elem. German *or* Elective	3	0	3	GR 102	Elem. German *or* Elective	3	0	3
E 113	Eng. Comp.	3	0	3	E 201	Humanities	3	0	3
P 111	Psychology	3	0	3	M 102	Calculus II	4	0	4
M 101	Coll. Alg., Calculus	4	0	4	PE 112	Phys. Ed. II	0	0	2
O 111	Orientation *or*				PH 106	Anal. Physics w/Lab.	4	3	3
O 101	Intro. to Engr.	0	0	1			18	6	19
P 111	Phys. Ed. I	0	0	2					
		17	3	19					

SECOND YEAR

GR 201	Inter. German *or* Elective	3	0	3	GR 202	Inter. German *or* Elective	3	0	3
EM 221	Statics	3	0	3	E 202	Humanities	3	0	3
EE 223	Prin. of E.E.	3	1	2	EM 323	Dynamics	3	0	3
M 201	Calculus III	4	0	4	M 202	Diff. Equations	3	0	3
PH 205	Anal. Phys. II w/Lab.	4	3	3	PH 206	Anal. Phys. III w/Lab.	4	3	3
		17	4	15			16	3	15

TOTAL — Associate in Science Degree in Physics: 68 Semester Hours.

MATHEMATICS

FIRST YEAR

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
E 113	English Comp.	3	E 201	Humanities	3
M 101	Coll. Alg. & Calc. I	4	M 102	Calculus II	4
M 121	Algebraic Structures	3	M 122	Algebraic Structures	3
P 111	Psychology	3	PE 112	Phys. Ed. II	0
O 111	Orientation *or*		PH 106	Anal. Physics I w/Lab.	4
O 101	Intro. to Engr.	0		Restricted Elective	3
PE 111	Phys. Ed. I	0			17
	Restricted Elective	3			
		16			

SECOND YEAR

EC 101	The American Economy	3	E 202	Humanities	3
M 201	Calculus III	4	E 220	Tech. Report Writing	3
M 123	Linear Algebra	3	M 202	Diff. Equations	3
PH 205	Anal. Physics II w/Lab.	4	PH 206	Anal. Physics III w/Lab.	4
	Restricted Elective	3		Restricted Elective	3
			M 231	Probability and Statistics	3
		17			19

Restricted Electives totaling 12 semester hours are to be selected from the following courses:

BA 216	Business Statistics	3	CH 102	General Chemistry w/Lab.	4
CH 101	General Chemistry w/Lab.	4	EE 224	Prin. of Elect. Engin.	3
EE 223	Prin. of Elect. Engin.	3	EM 322	Mechanics—Dynamics	3
EM 221	Mechanics—Statics	3	M 237	Scientific Programming	3
	Foreign Language	6-12			

TOTAL — Associate in Science Degree in Mathematics: 69 Semester Hours.

BACHELOR OF SCIENCE PROGRAMS

Electrical Engineering

	Fall	*Sem. Hrs.*	*Lab.*	*Class Hrs.*		*Spring*	*Sem. Hrs.*	*Lab.*	*Class Hrs.*
	THIRD YEAR								
EE 331	Alt. Current Cir.	3	0	3	EE 332	Alt. Current Cir.	3	0	3
EE 347	Electron. Engr.	3	0	3	EE 348	Electron. Engr.	3	2	2
EE 347	Electron. Engr. Lab.	1	3	0	EE 452	Engineering Anal.	3	0	3
EE 451	Engineering Anal.	3	0	3	EE 344	Elec. Machinery	4	3	3
EE 343	Elec. Machinery	4	3	3	IE 204	Engr. Economics	3	0	3
EM 234	Mechanics of Mat.	3	0	3		Restricted Elective	3	0	3
		17	6	15			19	5	17
	FOURTH YEAR								
EE 441 EE 455	Electron. Computers *or* Servomechanisms	3	0	3	EE 442 EE 456	Electron. Computers *or* Servomechanisms	3	0	3
EE 461	Waves & Fields	3	0	3	EE 450	Transistor Electronics	3	0	3
EE 437	Industrial Power Systems Engr.	3	0	3		Restricted Electives	12	0	12
	Restricted Electives	9	0	9					
		18	0	18			18	0	18

Selection of Electives

Restricted Electives totaling 24 semester hours are to be selected from the following courses: 6 or 9 semester hours from the Social Studies and Philosophy list, and 15 or 18 from the Engineering list. Logical grouping of electives is required, and selections are subject to the approval of the chairman of the Department of Electrical Engineering.

SOCIAL STUDIES AND PHILOSOPHY ELECTIVES

		Sem. Hrs.
SS 113	Sociology	3
SS 121	Political Science	3
SS 131-32	History of Western Civilization	6
SS 201-02	History of the United States	6
PHL 111	Introduction to Problems of Philosophy	3
PHL 113	Introduction to History of Philosophy	3

ENGINEERING ELECTIVES

EE 330	Introduction to Automation	3
EE 336	Instrumentation Electronics	3
EE 429	Measuring Principles and Transducers	3
EE 430	Automatic Control and Simulation	3
EE 438	Electric Power Transmission	3
EE 441-42	Electronic Computers	6
EE 445-46	Communication Circuits	6
EE 455-56	Servomechanisms	6
EE 462	Microwave Fundamentals	3
EE 504	Laboratory Thesis	3
IE 221	Data Processing	3

TOTAL—Bachelor of Science Degree in Electrical Engineering: 141 Hours.

Industrial Engineering

THIRD YEAR

	Fall	*Sem. Hrs.*	*Lab.*	*Class Hrs.*		*Spring*	*Sem. Hrs.*	*Lab.*	*Class Hrs.*
A 113	Indust. Accounting	3	0	3	EE 336	Instrum. Electron.	3	0	3
EM 234	Mech. of Materials	3	0	3	IE 342	Work Measurement	3	2	3
EM 235	Lab. #1	1	3	0	IE 204	Engr. Economics	3	0	3
EM 124	Mech. Processes	3	2	2	IE 119	Industrial Safety & Hygiene	3	0	3
IE 114	Mgmt. Survey	3	0	3	PS 244	Mgmt.-Labor Rel.	3	0	3
IE 241	Methods & Motion Study	3	2	2		Restricted Elective	3	0	3
	Restricted Elective	3	0	3					
		19	7	16			18	2	17

FOURTH YEAR

	Fall	*Sem. Hrs.*	*Lab.*	*Class Hrs.*		*Spring*	*Sem. Hrs.*	*Lab.*	*Class Hrs.*
IE 233	Cost Control	3	0	3	IE 234	Prod. Control	3	0	3
IE 346	Statistical Anal.	3	0	3	IE 443	Factory Planning	3	2	2
IE 351	Synthetic Motion-Time Systems	3	2	2	IE 502	Oper. Research	3	0	3
PS 223	Personnel Admin.	3	0	3	IE 504	Lab.-Thesis	3	3	0
	Restricted Electives	6	0	6	IE 221	Data Processing	3	0	3
						Restricted Elective	3	0	3
		18	2	17			15-18	5	11-14

TOTAL — Bachelor of Science Degree in Industrial Engineering: 139 Semester Hours.

Mechanical Engineering

THIRD YEAR

	Fall	*Sem. Hrs.*	*Lab.*	*Class Hrs.*		*Spring*	*Sem. Hrs.*	*Lab.*	*Class Hrs.*
EM 234	Mech. of Materials	3	0	3	EE 336	Indust. Electronics	3	0	3
EM 235	Lab. #1	1	3	0	IE 204	Engr. Economics	3	0	3
EM 124	Mech. Processes	3	2	2	EM 332	Thermodynamics II	3	0	3
EM 331	Thermodynamics I	3	0	3	EM 422	Mech. of Vibration	3	0	3
MT 219	Physical Metallurgy	3	2	2	EM 424	Lab. #2	1	3	0
	Restricted Electives	6	0	6		Restricted Electives	6	0	6
		19	7	16			19	3	18

FOURTH YEAR

EE 235	Electrical Machines	3	2	2
EM 343	Mechanism (Kinematics)	3	0	3
EM 333	Machine Design	3	0	3
EM 405	Fluid Mechanics	3	0	3
EM 407	Lab. #3	1	3	0
	Restricted Electives	3-6	0	3-6
		16-19	5	14-17

EM 334	Machine Design	3	0	3
EM 416	Heat Transfer	3	0	3
EM 418	Lab. #4	1	3	0
EM 512	Senior Seminar	3	0	0
	Restricted Electives	6-9	0	6-9
		16-19	3	12-15

TOTAL — Bachelor of Science Degree in Mechanical Engineering: 139 Semester Hours.

Selection of Electives

Restricted Electives for Industrial and Mechanical Engineers: The electives shall consist of between 6 and 9 credit hours chosen from the fields of Social Studies and Philosophy. The remaining electives shall be technical courses in a related engineering field.

The student must obtain the advice and approval of the chairman of the department in which he is registered in his choice of restricted electives. Students may secure restricted elective guide sheets from the Reception Office or from the respective department chairmen.

NEW HAVEN COLLEGE

Evening Credit Division

OFFERING THE DEGREE
ASSOCIATE IN SCIENCE in:

- *General Studies*
- *Accounting*
- *Business Administration*
- *Engineering—with majors in:*
  - *General Engineering*
  - *Electrical Engineering*
  - *Industrial Engineering*
  - *Mechanical Engineering*
  - *Metallurgical Engineering*

OFFERING THE DEGREE
BACHELOR OF SCIENCE in:

- *Business Administration —with majors in:*
  - *Accounting*
  - *Business Administration*
  - *Industrial Administration*
    - *General Option*
    - *Computer Option*
  - *Marketing*
  - *Public and Social Administration*
- *Electrical Engineering*
- *Industrial Engineering —with majors in:*
  - *General Industrial Engineering*
  - *Metallurgical Engineering*
- *Mechanical Engineering*

New Haven College, 1964-1965

Evening Credit Division

CALENDAR

SUMMER SESSION 1964

		1964
Placement Examinations:		
English examinations	Tuesday, 7:00 p.m.	June 2
Scholastic Aptitude examination	Wednesday, 7:00 p.m.	June 3
Mathematics examination	Wednesday, 8:15 p.m.	June 3
Registration period	Tuesday-Wednesday	June 9-10
Tuition due on or before	Wednesday	June 10
Classes begin	Wednesday	June 17
Holiday	Friday	July 3
First Term final examinations	Friday	July 24
Second Term classes begin	Monday	July 27
Second Term final examinations	Monday	August 31

FALL SEMESTER 1964

Registration for current and former students	Monday-Friday	August 24-September 4
Placement Examinations:		
English examinations	Tuesday, 7:00 p.m.	August 18
Scholastic Aptitude examination	Thursday, 7:00 p.m.	August 20
Mathematics examination	Thursday, 8:15 p.m.	August 20
Placement Examinations:		
English examinations	Wednesday, 7:00 p.m.	September 2
Scholastic Aptitude examination	Thursday, 7:00 p.m.	September 3
Mathematics examination	Thursday, 8:15 p.m.	September 3
Labor Day (holiday)	Monday	September 7
Registration for new students	Wednesday-Thursday	September 9-10
Tuition due on or before	Thursday	September 10
Classes begin	Thursday	September 17
Thanksgiving (holiday)	Thursday-Friday	November 26-27
Christmas recess	Saturday-Sunday	December 19-January 3
		1965
Classes resume	Monday	January 4
Last evening of classes	Friday	January 15
Final examinations	Monday-Friday	January 18-22
Recess	Saturday-Wednesday	January 23-February 3

SPRING SEMESTER 1965

Registration for current and former students	Monday-Wednesday	January 4-13
Placement Examinations:		
English examinations	Tuesday, 7:00 p.m.	January 5
Scholastic Aptitude examination	Wednesday, 7:00 p.m.	January 6
Mathematics examination	Wednesday, 8:15 p.m.	January 6

Registration for new students	Tuesday-Wednesday	January 26-27
Tuition due on or before	Wednesday	January 27
Classes begin	Thursday	February 4
Good Friday (holiday)	Friday	April 16
Final examinations	Monday-Thursday	May 24-27
Holiday	Monday	May 31
Commencement	Sunday	June 13

SUMMER SESSION 1965

Placement Examinations:		1965
English examinations	Wednesday, 7:00 p.m.	June 2
Scholastic Aptitude examination	Thursday, 7:00 p.m.	June 3
Mathematics examination	Thursday, 7:00 p.m.	June 3
Registration period	Tuesday-Wednesday	June 8-9
Tuition due on or before	Wednesday	June 9
Classes begin	Wednesday	June 16
Holiday	Monday	July 5
First term final examinations	Friday	July 23
Second term classes begin	Monday	July 26
Second term final examinations	Monday	August 30

Evening Credit Division

Aims and Objectives

Recognizing that education, in the broadest sense of the word, is a process confined not alone to the classroom, this division of the College takes notice of a student's job as well as his instructional experiences.

The College believes that work is good educational experience, but that when work experience is related to academic instruction, it is better. Therefore, it contends that a student's work experiences and academic experiences should be integrated as much as is possible and feasible. It sees this integration as a means whereby the traditional barrier between the academic and the practical may be broken down.

In accordance with this point of view, the College encourages and assists its students either to seek employment which is related to their programs of study, or to pursue programs of study which are related to their present or contemplated work. This the College does because it regards the student's job as a laboratory where he may apply the knowledge he gains at the College, or from which he receives practical incentives for study in the classroom. As is to be expected, the degree of relationship between work and study will vary among companies depending on the variety of experience possible in a given company and the degree of cooperation developed between the College and the company in planning for these relationships.

It is important that students pursue a related work program after the first year of study. It has been found that, although not essential to the more elementary work of the first year, work experience is essential thereafter if the student is to progress with the general level of his classes. Dependence is placed on work experience for acquring technical terminology, skill, and familiarity with illustrations which will be used in classes. While the degree of essential relationship between work and study may be slight even in the second year, the need progressively increases in the advanced stages of the program. The most elementary office jobs for a business student, or comparable plant jobs for an engineering student, are considered sufficiently related for the earlier part of the program.

The placement activity of the College, described elsewhere in this bulletin, is designed primarily to implement the idea of an integrated program of related work and study.

Admission of Students from Secondary Schools

Requirements—The following regulations apply to the admission of students from secondary schools.

The applicant should be a graduate of an approved secondary school or should possess a state high school diploma.* In some cases, an adult who has completed at least two years of secondary school with satisfactory record may be considered, provided he performs exceptionally well on the placement examinations which are required. The admission of such an adult will be tentative for one year, during which time he must pass the state examinations for the state high school diploma.* No person will be considered who has not completed at least two years of secondary school. The quality of the secondary school record, especially of the academic subjects it contains, is given greater consideration than is the specific pattern of courses taken in secondary school.

Applicants from secondary schools are required to take admission tests, including Scholastic Aptitude, Mechanics of English, Reading Comprehension, and Mathematics.

College Entrance Examination Board results, if satisfactory, are accepted in place of the New Haven College admission examinations.

Classification of Students

There are three classifications of students in the Evening Credit Program: Degree Student, Non-Degree Student, and Auditor.

Degree Student — The degree student indicates on his registration that he is undertaking to complete the requirements for the A.S. Degree or B.S. Degree in one of the Evening Credit Programs. He must satisfy all the admission requirements and be a fully matriculated student.

Non-Degree Student — The non-degree student is one who does not intend to meet all the requirements for a degree, but who wishes to select certain subjects which are offered as a part of the degree requirements. Although not seeking a degree, the non-degree student must satisfy all admission requirements in the same way as the degree student, thus making it possible for him to become a degree candidate at any later registration simply by so indicating on his registration. Although the student is not a candidate for a degree, he must be fully matriculated.

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* Information regarding the examinations for the state high school diploma may be obtained from the Director of Admissions, or by writing to the Bureau of Youth Services, State Department of Education, State Office Building, Hartford, Connecticut.

Auditor – The classification of auditor is assigned to persons who wish merely to attend class and listen to the discussion. Since they are not required to meet any of the admission requirements, they are not privileged to participate in discussion, nor to have tests and examinations graded by the instructor; they are not subject to attendance regulations, and are not granted any credit.

Schedule of Hours and Subject Load

All courses, except laboratory courses, offered in the Evening Credit Program are scheduled to meet from 7:00 P.M. to 9:45 P.M. The College is operated Monday through Friday.

A student may carry as little as three semester hours or as many as ten, depending on his wishes. The same academic standards are required of the student regardless of the number of credits he carries.

COLLEGE-COMMUNITY PROGRAMS

THE EXTENSION DIVISION

George A. Schaefer, Director

A particular function of the community college is to organize and develop programs of study which will serve the more specific needs of area industries and organizations.

New Haven College has successfully undertaken these programs as opportunity has presented itself. The courses may take the form of off-campus extension programs with classes being held in training classrooms of specific companies or the work may be done on campus at the College.

One example is the Southern New England Telephone Company Program in which the College and students from the company have undertaken a curriculum in advanced electrical engineering. Beginning as an off-campus program with classes being held twice weekly in the Training Division classrooms of the Southern New England Telephone Company, the program is now taught on campus as an intrinsic part of the regular Degree Program in Electrical Engineering.

These programs are entirely company financed. Candidates must qualify by passing the New Haven College entrance examinations after being approved through testing and interviewing by a screening committee from the company. Class schedules vary with the program. In the case of the completed Olin Mathieson program, students attended classes three days a week from 3:30 to 6:00 P.M. for eight 15-week semesters. They remained on their regular jobs for the first semester at which point they transferred to engineering departments for on-the-job trainee assignments during the remainder of the program.

Another program is the Police Science and Administration curriculum, which is a three-year Associate Degree program for professional policemen throughout Connecticut. Upon receiving the Associate Degree in Police Science and Administration, the student may continue his work toward the Bachelor of Science in Business Administration with the Public and Social Administration Major.

Evening Credit Division

PROGRAMS OF STUDY

Associate in Science Programs
Bachelor of Science Programs

Associate in Science Programs

PROGRAM OF GENERAL STUDIES

It is recognized that there are certain groups of students who desire a general education. These students may be categorized as follows:

> Those who wish a college degree in the field of general studies, but who do not desire to spend four years in a senior college.
>
> Those who have not yet decided which technical field they want to specialize in, but who, in the meantime, desire an education of a general nature.
>
> Those who want a general education and degree at junior college level for later transfer to a senior college for a bachelor's degree.
>
> Those college graduates of technical programs who now find that their need lies in the field of general studies and the corresponding acquisition of educational breadth.

The College is meeting the needs of these students by offering the program outlined below. The Associate in Science in General Studies is awarded upon the successful completion of the requirements. A total of 60 semester hours of study is required.

The total hours required are distributed as follows:

Required Courses, totaling .... 42 sem. hrs.

		Sem. Hrs.
*E 113	English Composition	3
E 114	Speech	3
E 211-212	Major British Writers	6
E 201-202	Humanities	6
EC 133-134	Principles of Economics	6
P 111	Psychology	3
PHL 111	Philosophy or	
PHL 113	History of Philosophy	3
SC 111-112	Modern Science or Science electives	6
SS 113-114	Sociology or	
SS 121-122	Political Science	6

Elective Courses, totaling .... 18 sem. hrs.

To be selected from any credit offerings of the College for which the student satisfies prerequisites. See course descriptions.

Total Hours Required for Associate in Science Degree .... 60 sem hrs.

For other courses available as substitutes or electives at Quinnipiac College, consult the Dean.

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* Entrance into this course is permitted upon satisfactory performance on the placement examination.

ACCOUNTING

(Associate in Science)

The Associate in Science degree in Accounting will be granted upon the completion of the 63 semester hours listed in the first three and one-half years of the Bachelor of Science with major in Accounting program. (See page 66).

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BUSINESS ADMINISTRATION

(Associate in Science)

The Associate in Science degree in Business Administration will be granted upon the completion of the 63 semester hours listed in the first three and one-half years of the Bachelor of Science with major in Business Administration program. (See page 67).

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ENGINEERING

(Associate in Science)

The purpose of this series of Engineering Programs is to meet the needs of students who wish to specialize in one of the fields of engineering offered by the College without undertaking a Bachelor Program. The first two years a student will take the necessary courses in Physics and Math. which are prerequisites for most of the engineering courses. In the third and fourth years the student may select from the following engineering fields: General, Electrical, Industrial, Mechanical, or Metallurgical. Required courses total 51-58 semester hours. Restricted electives total 10-21 hours. Total for the Associate in Science degree is 72. See options for specific details.

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
	FIRST YEAR (Common Core)				
E 113	*English Composition	3	IE 114	Management Survey	3
EM 101	Engineering Drawing	2	EM 102	Drawing & Desc. Geom.	2
M 111	*College Algebra	3	M 113	Trigonometry	3
	SECOND YEAR (Common Core)				
E 201	Humanities	3	E 202	Humanities	3
M 221	Calculus & Anal. Geom.	3	M 222	Diff. & Integ. Calculus	3
PH 221	Engin. Physics w/Lab.	4	PH 222	Engin. Physics w/Lab.	4

* Entrance into this course is permitted upon satisfactory performance on the placement examinations.

MAJOR IN GENERAL ENGINEERING

THIRD AND FOURTH YEARS

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
E 220	Tech. Report Writing	3	EE 224	Prin. of Elect. Engin.	3
EE 223	Prin. of Elect. Engin.	3	IE 234	Production Control	3
EM 123	Engineering Materials	3	EM 124	Mechanical Processes	3
	Restricted Electives	9		Restricted Electives	9

Restricted Electives totaling 18 semester hours are to be selected from the following courses.

CH 221-222	Engin. Chem. w/lab.	6	IE 233	Cost Control	3
EC 101	The American Economy	3	IE 241	Methods & Motion Study	3
EE 330	Intro. to Automation	3	IE 342	Work Measurement	3
EE 336	Instrum. Electronics	3	EM 335-336	Tool Design	6
IE 119	Indust. Safety & Hygiene	3	MT 219	Physical Metallurgy	3
IE 204	Engineering Economics	3	MT 220	Metallography	3
			PH 323	Modern Physics w/Lab.	3

MAJOR IN ELECTRICAL ENGINEERING

THIRD AND FOURTH YEARS

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
EE 223	Prin. of Elect. Engin.	3	EE 224	Prin. of Elect. Engin.	3
EE 331	Alt. Current Circuits	3	EE 332	Alt. Current Circuits	3
PH 323	Modern Physics w/Lab.	3	M 323	Adv. Math. for Engin. I	3
	Restricted Electives	9		Restricted Electives	9

Restricted Electives totaling 18 semester hours are to be selected from the following courses.

CH 221-222	Engin. Chem. w/lab.	6	EE 342	Alt. Current Machines	3
E 220	Tech. Report Writing	3	EE 437	Industrial Power Systems Engineering	3
EE 330	Intro. to Automation	3	EM 221	Mechanics—Statics	3
EE 336	Instrum. Electronics	3	EM 322	Mechanics—Dynamics	3
EE 341	Direct Current Machines	3	M 324	Adv. Math. for Engin. II	3

MAJOR IN INDUSTRIAL ENGINEERING

THIRD AND FOURTH YEARS

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
EE 223	Prin. of Elect. Engin.	3	EE 224	Prin. of Elect. Engin.	3
EC 133	Prin. of Economics	3	IE 204	Engineering Economics	3
EM 123	Engineering Materials	3	IE 342	Work Measurement	3
IE 241	Methods & Motion Study	3	EM 124	Mechanical Processes	3
P 111	Psychology	3		Restricted Eelectives	4-6
	Restricted Electives	3			

Restricted Electives totaling 9 semester hours are to be selected from the following courses:

A 113	Industrial Accounting	3	IE 233	Cost Control	3
E 220	Tech. Report Writing	3	IE 234	Production Control	3
IE 119	Indust. Safety & Hygiene	3	IE 351	Synthetic Motion — Time Systems	3
IE 221	Data Processing	3	PS 223	Personnel Administration	3
IE 224	Programming	3	PS 244	Mgmt.-Labor Relations	3

MAJOR IN MECHANICAL ENGINEERING

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
	Third and Fourth Years				
EE 223	Prin. of Elect. Engin.	3	EE 224	Prin. of Elect. Engin.	3
EM 123	Engineering Materials	3	EM 124	Mechanical Processes	3
EM 221	Mechanics-Statics	3	EM 322	Mechanics-Dynamics	3
	Restricted Electives	9		Restricted Electives	9

Restricted Electives totaling 18 semester hours are to be selected from the following courses:

CH 221-222	Engin. Chem. w/Lab.	6	EM 405	Fluid Mechanics	3
E 220	Tech. Report Writing	3	EM 416	Heat Transfer	3
EM 234	Mechanics of Materials	3	EE 235	Electrical Machines	3
EM 331-332	Thermodynamics	6	MT 219	Physical Matallurgy	3
EM 343	Mechanisms	3	PH 323	Modern Physics	3
EM 333-34	Machine Design	6	PH 315	Nuclear Physics	3
EM 335-336	Tool Design	6	M 323-324	Adv. Math for Engin. I & II	6

MAJOR IN METALLURGICAL ENGINEERING

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
	Third and Fourth Years				
CH 221	Engin. Chem. w/Lab.	3	CH 222	Engin. Chem. w/Lab.	3
EM 123	Engineering Materials	3	EM 124	Mechanical Processes	3
MT 219	Physical Metallurgy	3	MT 220	Metallography	3
	Restricted Electives	9		Restricted Electives	9

Restricted Electives totaling 18 semester hours are to be selected from the following courses:

EE 223-224	Prin. of Elect. Engin.	6	MT 342	Steels & Heat Treatment	3
EM 221	Mechanics—Statics	3	PH 323	Modern Physics	3
EM 234	Mechanics of Materials	3	PH 315	Nuclear Physics	3
EM 322	Mechanics—Dynamics	3	EE 235	Electrical Machines	3
MT 224	Nuclear Metallurgy	3	E 220	Tech. Report Writing	3
MT 331	Non-ferrous Metallurgy	3			

TOTAL required for Degree: 70 Semester Hours.

BACHELOR OF SCIENCE PROGRAMS

Business: Students may earn a Bachelor of Science degree in Business by majoring in Accounting, Business Administration, Industrial Administration, Marketing, or Public and Social Administration.

Engineering: Students may earn a Bachelor of Science degree in Engineering by majoring in Electrical Engineering, Industrial Engineering or Mechanical Engineering. Through the completion of the required courses and through the selection of electives, students may gain knowledge in the fields of electrical, industrial, mechanical, or metallurgical engineering, and in the field of personnel administration.

Core requirements for all Bachelor of Science programs are given in the General Information section of this catalog. (See page 23).

No substitutions will be allowed for the specific courses required in the programs without the approval of the department chairman.

BUSINESS ADMINISTRATION

with major in

ACCOUNTING

(Bachelor of Science)

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
	FIRST YEAR				
A 111	Introductory Accounting	3	A 112	Introductory Accounting	3
BA 101	Business Law	3	BA 102	Business Law	3
*E 113	English Composition	3	E 114	Speech	3
	SECOND YEAR				
A 221	Intermediate Accounting	3	A 222	Intermediate Accounting	3
EC 133	Prin. of Economics	3	EC 134	Prin. of Economics	3
IE 114	Management Survey	3	E 220	Technical Report Writing	3
	THIRD YEAR				
A 223	Cost Accounting	3	A 224	Cost Accounting	3
A 331	Advanced Accounting	3	A 332	Advanced Accounting	3
E 201	Humanities	3	A 202	Humanities	3
	FOURTH YEAR				
A 333	Auditing	3	A334	Auditing	3
BA 105	Prin. of Marketing	3	BA 106	Prin. of Selling	3
**M 109	General Mathematics	3	BA 118	Business Mathematics	3
	FIFTH YEAR				
A 335	Income Tax Procedure	3	A 336	Income Tax Procedure	3
PS 223	Personnel Administration	3	PS 244	Management—Labor Rel.	3
SS 121	Political Science	3	SS 122	Political Science	3
	SIXTH YEAR				
BA 113	Business Finance	3	BA 216	Business Statistics	3
	Science	3		Science	3
PHL 111	Intro. to Philosophy	3	P 111	Psychology	3
	SEVENTH YEAR				
A 443	Accounting Systems	3	BA 512	Business Seminar	3
SS 113	Sociology	3		Electives	6
	Elective	3			

Electives totaling at least 9 semester hours are required in addition to the 117 semester hours of specific course requirements. See recommendations below for the selection of electives for all Business Administration students.

TOTAL — Bachelor of Science Degree: 126 Semester Hours.

* Entrance into this course is permitted upon satisfactory performance on the placement examination.

** M 109 may be waived by entrance examination and an elective substituted.

BUSINESS ADMINISTRATION
with major in
BUSINESS ADMINISTRATION

(Bachelor of Science)

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
	FIRST YEAR				
A 111	Introductory Accounting	3	A 112	Introductory Accounting	3
BA 101	Business Law	3	BA 102	Business Law	3
* E 113	English Composition	3	E 114	Speech	3
	SECOND YEAR				
EC 133	Prin. of Economics	3	BA 118	Business Mathematics	3
IE 114	Management Survey	3	EC 134	Prin. of Economics	3
** M 109	General Mathematics	3	E 220	Technical Report Writing	3
	THIRD YEAR				
BA 105	Principles of Marketing	3	BA 106	Principles of Selling	3
E 201	Humanities	3	E 202	Humanities	3
PS 223	Personnel Administration	3	PS 225	Human Relations in Industry	3
	FOURTH YEAR				
P 111	Psychology	3	PS 244	Management-Labor Relations	3
SS 121	Political Science	3	SS 122	Political Science	3
SS 113	Sociology	3		Elective	3
	FIFTH YEAR				
	Science	3		Science	3
BA 203	Prin. of Transportation	3	BA 216	Business Statistics	3
PHL 111	Intro. to Philosophy	3	EC 236	Money & Banking	3
	SIXTH YEAR				
BA 107	Prin. of Advertising	3	BA 214	Public Finance	3
BA 113	Business Finance	3	EC 442	Economic Thought	3
EC 211	Govt. Reg. of Business	3		Elective	3
	SEVENTH YEAR				
EC 445	Economic Analysis	3	BA 512	Business Seminar	3
	Electives	6		Electives	6

Electives totaling at least 18 semester hours are required in addition to the 108 semester hours of specific course requirements. See recommendation below for the selection of electives for all Business Administration students.

TOTAL — Bachelor of Science Degree: 126 Semester Hours.

* Entrance into this course is permitted upon satisfactory performance on the placement examinations.

** M 109 may be waived by entrance examination and an elective substituted.

BUSINESS ADMINISTRATION
with major in
INDUSTRIAL ADMINISTRATION

(Bachelor of Science)

General Option

First four years the same as Business Administration major. (See page 67).

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
		FIFTH YEAR			
	Science	3		Science	3
IE 233	Cost Control	3	BA 216	Business Statistics	3
PHL 111	Intro. to Philosophy	3	IE 234	Production Control	3
		SIXTH YEAR			
EC 240	Labor Economics	3	BA 302	Industrial Marketing	3
EC 211	Govt. Reg. of Business	3	IE 342	Work Measurement	3
IE 241	Methods & Motion Study	3	EM 124	Mechanical Processes	3
		SEVENTH YEAR			
BA 113	Business Finance	3	BA 512	Business Seminar	3
	Electives	6	P 212	Bus. & Industrial Psychology	3
				Elective	3

Electives totaling at least 12 semester hours are required in addition to the 114 semester hours of specific course requirements. See recommendation below for the selection of electives for all Business Administration students.
TOTAL — Bachelor of Science Degree: 126 Semester Hours.

BUSINESS ADMINISTRATION
with major in
INDUSTRIAL ADMINISTRATION

(Bachelor of Science)

Computer Option

First four years the same as Business Administration major. (See page 67).

	Fall	*Sem. Hrs.*		*Spring*	*Sem Hrs.*
		FIFTH YEAR			
	Science	3		Science	3
IE 233	Cost Control	3	BA 216	Business Statistics	3
PHL 111	Intro. to Philosophy	3	IE 234	Production Control	3
		SIXTH YEAR			
IE 221	Data Processing	3	IE 224	Programming	3
IE 241	Methods & Motion Study	3	IE 342	Work Measurement	3
M 227	Math. for Computers I	3	M 228	Math. for Computers II	3
		SEVENTH YEAR			
BA 113	Business Finance	3	BA 512	Business Seminar	3
IE 502	Operations Research	3	IE 502	Operations Research	3
	Elective	3	IE 510	Business Games	3

Electives totaling at least 6 semester hours are required in addition to the 120 semester hours of specific course requirements. See recommendation below for the selection of electives for all Business Administration students.
TOTAL — Bachelor of Science Degree: 126 Semester Hours.

BUSINESS ADMINISTRATION
with major in
MARKETING
(Bachelor of Science)

First four years the same as Business Administration major. (See page 67).

	Fall	*Sem Hrs.*		*Spring*	*Sem Hrs.*
		FIFTH YEAR			
BA 301	Retailing	3	BA 302	Industrial Marketing	3
BA 107	Prin. of Advertising	3	BA 108	Advertising Management	3
PHL 111	Intro. to Philosophy	3	BA 216	Business Statistics	3
		SIXTH YEAR			
BA 315	Marketing Management	3	BA 316	Sales Management	3
	Science	3		Science	3
BA 342	Marketing Research	3	BA 312	International Marketing	3
		SEVENTH YEAR			
BA 113	Business Finance	3	BA 512	Business Seminar	3
BA 131	Public Relations	3		Electives	6
P 211	Social Psychology	3			

Electives totaling at least 9 semester hours are required in addition to the 117 semester hours of specific course requirements. See recommendation below for the selection of electives for all Business Administration students.

TOTAL — Bachelor of Science Degree: 126 Semester Hours.

BUSINESS ADMINISTRATION
with major in
PUBLIC & SOCIAL ADMINISTRATION
(Bachelor of Science)

First four years the same as Business Administration major. (See page 67).

	Fall	*Sem Hrs.*		*Spring*	*Sem Hrs.*
		FIFTH YEAR			
	Science	3		Science	3
EC 240	Labor Economics	3	BA 214	Public Finance	3
SA 101	Prin. of Public Administration	3	BA 312	International Marketing	3
		SIXTH YEAR			
P 211	Social Psychology	3	P 212	Bus. & Industrial Psychology	3
EC 211	Govt. Reg. of Business	3			
SA 201	Social Administration I	3	SS 302	The U.S. Constitution	3
			SA 202	Social Administration II	3
		SEVENTH YEAR			
BA 113	Business Finance	3	BA 512	Business Seminar	3
SS 201	History of the U.S.	3	SS 202	History of the U.S. II	3
	Elective	3		Elective	3

Electives totaling at least 9 semester hours are required in addition to the 117 semester hours of specific course requirements. See recommendation below for the selection of electives for all Business Administration students.

TOTAL — Bachelor of Science Degree: 126 Semester Hours.

Selection of Electives

(Bachelor of Science Candidates)

It is recommended that Business Administration students select their electives from related fields, such as Accounting, Business Administration, Economics, Personnel Supervision, Social Administration, Psychology, Mathematics for Computers, and applicable courses in Industrial and Mechanical Engineering.

ENGINEERING

(Bachelor of Science)

The engineering programs combine the basic courses in chemistry, mathematics, physics, humanities, and social sciences with advanced studies in the various branches of engineering. All students are required to take the same core courses which comprise the first four years of the engineering program. An associate degree in engineering may be received upon completion of the core program.

COMMON CORE COURSES

	Fall	*Sem Hrs.*		*Spring*	*Sem Hrs.*
		FIRST YEAR			
E 113	*English Composition	3	E 220	Tech. Report Writing	3
EM 101	Engineering Drwg.	2	EM 102	Drwg. & Desc. Geom.	2
M 111	*College Algebra	3	M 113	Trigonometry	3
		SECOND YEAR			
CH 221	Engr. Chem. w/Lab.	3	CH 222	Engr. Chem. w/Lab.	3
EM 123	Engr. Materials	3	M 222	Diff. & Integ. Calculus	3
M 221	Calc. & Anal. Geom.	3	P 111	Psychology	3
		THIRD YEAR			
E 201	Humanities	3	E 202	Humanities	3
M 323	Adv. Math. for Engrs. I	3	M 324	Adv. Math. for Engrs. II	3
PH 221	Engr. Physics w/Lab.	4	PH 222	Engr. Physics w/Lab.	4
		FOURTH YEAR			
EE 223	Prin. of Elec. Engr.	3	EC 133	Prin. of Economics	3
EM 221	Mechanics—Statics	3	EE 224	Prin. of Elec. Engr.	3
PH 323	Modern Physics	3	EM 322	Mechanics—Dynamics	3

TOTAL Required for Associate Degree in Engineering 72 Sem. Hrs.

* Entrance into this course is permitted upon satisfactory performance on placement examinations.

ELECTRICAL ENGINEERING

(Bachelor of Science)

Upon satisfactory completion of the four-year core program, the student may pursue advanced courses with specialization in electronics, computers, servomechanisms or industrial controls leading to the Bachelor of Science degree in Electrical Engineering.

In order to acquire the Bachelor of Science degree, the student must complete the required courses listed below and a selected group of electives in the field of his choice.

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
		FIFTH YEAR			
EE 331	Alt. Current Circuits	3	EE 332	Alt. Current Circuits	3
EE 341	Electronic Engineering	3	EE 342	Electronic Engineering	3
EM 234	Mech. of Materials	3	IE 221	Data Processing	3
		SIXTH YEAR			
EE 343	Electrical Machinery	3	EE 344	Electrical Machinery	3
EE 451	Engineering Analysis	3	EE 452	Engineering Analysis	3
	Restricted Elective	3	IE 204	Engineering Economics	3
		SEVENTH AND EIGHTH YEARS			
EE 441 EE 455	Electronic Computers *or* Servomechanisms	3	EE 442 EE 456	Electronic Computers *or* Servomechanisms	3
EE 461	Waves & Fields	3	EE 450	Transistor Electronics	3
EE 437	Indust. Power Sys. Engr.	3		Restricted Electives	12
	Restricted Electives	6			

Selection of Electives

Restricted Electives totaling 21 semester hours are to be selected from the following courses: 6-9 semester hours from the Social Studies and Philosophy list, and 13-16 semester hours from the Engineering list. Logical grouping of electives is required, and selections are subject to the approval of the chairman of the Department of Electrical Engineering.

Social Studies and Philosophy Electives

SS 113	Sociology	3
SS 121	Political Science	3
SS 131-32	History of Western Civilization	6
SS 201-02	History of the United States	6
PHL 111	Introduction to Problems of Philosophy	3
PHL 113	Introduction to History of Philosophy	3

Engineering Electives

EE 330	Introduction to Automation	3
EE 336	Instrumentation Electronics	3
EE 429	Measuring Principles and Transducers	3
EE 430	Automatic Control and Simulation	3
EE 438	Electric Power Transmission	3
EE 441-42	Electronic Computers	6
EE 445-46	Communication Circuits	6
EE 455-56	Servomechanisms	6
EE 462	Microwave Fundamentals	3

TOTAL Required for Bachelor of Science Degree in Electrical Engineering .. 141 Sem. Hrs.

INDUSTRIAL ENGINEERING

(Bachelor of Science)

The program of Industrial Engineering is planned to prepare students to apply the engineering methods to the problems of management in industry.

In order to acquire the Bachelor of Science in Industrial Engineering, students must complete the four-year core program of required courses totaling 122 semester hours and the balance of 18 semester hours in restricted electives as listed below.

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
Fifth Year					
IE 114	Management Survey	3	IE 204	Engineering Economics	3
EM 426	Lab. #1 & 2	2	IE 119	Indust. Safety & Hygiene	3
EM 234	Mechanics of Materials	3	EM 124	Mechanical Processes	3
Sixth Year					
A 113	Industrial Accounting	3	IE 221	Data Processing	3
IE 241	Methods & Motion Study	3	IE 342	Work Measurement	3
PS 223	Personnel Administration	3	PS 244	Mgmt.-Labor Relations	3
Seventh and Eighth Years					
IE 234	Production Control	3	EE 336	Industrial Electronics	3
IE 346	Statistical Analysis	3	IE 443	Factory Planning	3
	Restricted Electives	9	IE 233	Cost Control	3
				Restricted Electives	9

Restricted Electives totaling 18 semester hours must include 6 to 9 semester hours from the fields of Social Science and Philosophy. The remaining electives required shall be a logical grouping of technical electives selected from one of the Options offered, General or Metallurgical. They must have the approval of the Chairman of the Industrial Engineering Department. Students should secure a list of recommended restricted electives from the Reception Office Secretary.

TOTAL Required for Bachelor of Science Degree in Industrial Engineering .. 140 Sem. Hrs.

MECHANICAL ENGINEERING

(Bachelor of Science)

Upon satisfactory completion of the four-year core program, the student may pursue advanced courses with specialization in machine design, automatic control, metallurgy, mechanics, etc., leading to the Bachelor of Science degree. The student must complete the required courses listed below and a selected group of electives in the field of his choice.

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
Fifth Year					
EM 234	Mechanics of Materials	3	EE 336	Instrumentation Electronics	3
MT 219	Physical Metallurgy	3	IE 204	Engineering Economics	3
	Restricted Elective	3	EM 124	Mechanical Processes	3
Sixth Year					
EE 235	Electrical Machines	3	EM 332	Thermodynamics	3
EM 331	Thermodynamics	3	EM 426	Lab. #1 and 2	2
EM 343	Mechanisms (Kinematics)	3	EM 422	Mechanics of Vibration	3
Seventh and Eighth Years					
EM 333	Machine Design	3	EM 334	Machine Design	3
EM 405	Fluid Mechanics	3	EM 416	Heat Transfer	3
EM 429	Lab. #3 and 4	2	EM 512	Senior Seminar	3
	Restricted Electives	9		Restricted Electives	7-9

Restricted Electives totaling 19 semester hours must include 6 to 9 semester hours from the fields of Social Science and Philosophy. The remaining electives required shall be a logical grouping of advanced courses in mathematics, science and engineering and must have the approval of the Chairman of the Mechanical Engineering Department. Students should secure a list of recommended restricted electives from the Reception Office secretary.

TOTAL Required for Bachelor of Science Degree in Mechanical Engineering .. 140 Sem. Hrs.

NEW HAVEN COLLEGE

DESCRIPTION OF COURSES

New Haven College, 1964-1965

Description of Courses

Courses bearing hyphenated numbers, for example, A111-112, are two semesters in length, and the first semester is prerequisite to the second.

Courses bearing single numbers, for example, L 221, are only one semester in length.

Courses designated by letter rather than by number are not of college grade, although they involve class and preparation time equivalent to other courses.

Courses of the 100 level have no prerequisites: 200 level courses have one prerequisite: 300-level have two prerequisites; 400-level courses have three or more prerequisites, or are to be taken in the final two years of a bachelor of science program.

Accounting

A 111-112. Introductory Accounting. Credit, 6 semester hours.

This course, which is prerequisite to all other courses in accounting, familiarizes the student with fundamental principles of accounting. This work is supplemented by progress tests, problems, and systematic practice work. The fields of study covered include: interpretation of assets, liabilities, and net worth; preparation of statements; books of original entry; ledgers; and work at the end of a fiscal period.

(Offered also in Spring Semester on a two nights per week basis.)

A 113. Industrial Accounting. Credit, 3 semester hours.

(This course cannot be taken by accounting and business administration majors.)

This is a basic course designed to acquaint engineering students with the vocabulary of accounting, the accounting cycle and the presentation of accounting statements.

A 221-222. Intermediate Accounting. Credit, 6 semester hours.

Prerequisite: A111-112.

This course is a continuation at a more advanced level of the principles studied in Introductory Accounting. It is intensive and adapted to present-day changes in the accounting profession. The subject matter includes: the corporation, asset valuations, liabilities, installment sales and consignments, analysis and interpretation of financial statements, sources and application of funds, depreciation methods, inventory evaluation, reserves, and surplus analysis. There is considerable practice in the form of problem solutions. Reference is made to the publications of the professional accounting societies.

A 223-224. Cost Accounting. Credit, 6 semester hours.

Prerequisite: A111-112

Offered in September of EVEN years. Offered in September of ODD years at Quinnipiac College.

This course embraces the study of departmental and process cost accounting, specific order cost accounting, and standard costs. Thorough consideration is given to cost elements of material, labor, and manufacturing expense. Also included is the study of cost estimating, budgets in cost control, cost relationships, and cost reports for use of management. Forms and methods used in standard costs and analyses of variances for operational use are considered. Practical application of the principles studied is given through the working of practice sets and problems.

A 331-332. Advanced Accounting. Credit, 6 semester hours.

Prerequisite: A 221-222.

This is the final general accounting course covering all phases of accounting not previously covered and not considered of a specialized nature. This course is given in two sections, neither section being dependent upon the other. Upon completion of these sections, the student is prepared for advanced study in specialized accounting problems.

A 333-334. Auditing. Credit, 6 semester hours.

Prerequisite: A 221-222, may be taken concurrently.

Offered in September of ODD years. Offered in September of EVEN years at Quinnipiac College.

This course includes examination of the financial condition, review of operations, preparation of audit program, audit working papers, and report upon examination of the client's business. The accountant's relationship with the client and the ethics of the profession are thoroughly discussed. A complete laboratory test is worked out to supplement the text study. Recent developments in audit procedure are included, systems in internal check analyzed, comparisons of balance sheets and detailed audits made. A background is developed in the theory of auditing in preparation for the C.P.A. examination.

A 335-336. Income Tax Procedure. Credit, 6 semester hours.

Prerequisite: A 221-222 recommended; A 111-112 required.

This course embraces a practical application of the principles of Federal Income Tax Law to concrete situations. The problems include the preparation of corporation, fiduciary, partnership, and individual tax returns; claims for refunds, credit, and abatement; records, reports, and requirements of Social Security and state and federal unemployment taxes; and the proper accounting procedure for tax records.

A 338. Auditing. Credit, 3 semester hours.

Prerequisite: A 221-222, may be taken concurrently.

This course includes examination of the financial condition, review of operations, preparation of audit program, audit working papers, and report upon examination of the client's business. The accountant's relationship with the client and the ethics of the profession are thoroughly discussed. Recent developments in audit procedure are included, systems in internal check analyzed, comparisons of balance sheets and detailed audits made. A background is developed in the theory of auditing in preparation for the C.P.A. examination.

A 341. Advanced Accounting. Credit, 3 semester hours.

Prerequisite: A 221-222.

A consideration of problems involving the following: partnerships, venture accounts, consignments, installment sales, insurance, the statement of affairs, receiver's accounts, compound interest and annuities, estates and trusts, parent and subsidiary accounting, and public accounts.

A 342. Income Tax Procedure. Credit, 3 semester hours.

Prerequisite: A 221-222 recommended; A 111-112 required.

This course embraces a practical application of the principles of Federal Income Tax Law. Problems include the preparation of corporation, fiduciary, partnership, and individual tax returns; claims for refunds, credit, and abatement; records, reports, and requirements of Social Security and state and federal unemployment taxes; and the proper accounting procedure for tax records.

A 443. Accounting Systems I. Credit, 3 semester hours.

Prerequisite: A 224, A 332 or A 341.

Offered in September of EVEN years.

This course deals with the principles and practices applied in developing accounting systems. Such topics are covered as the preliminary survey; principles of internal check; systems for handling cash, receivables, purchases, sales and payrolls; special journals, ledgers, and statements.

A 444. Accounting Systems II. Credit, 3 semester hours.

Prerequisite: A 443.

Offered in February of ODD years.

A continuation of Accounting Systems I in which the principles studied are observed and analyzed through field trips to businesses and institutions which can best demonstrate the various types of accounting systems. The student is taught how to develop and adapt accounting systems according to the needs of different operations.

Art

ART 101-102. Drawing and Painting I and II. Credit, 6 semester hours.

This course is an introduction to the basic fundamentals of drawing and painting. Problems in drawing will alternate throughout the year with painting projects. The student will thus be given time to assimilate his experience in the preceding problem while working in the alternate medium. Drawing will include exercises to develop coordination of hand and eye, drawing various objects in correct perspective and study of the human figure, its volumes, shifting axes and action. Special emphasis will be given to the exploitation of line as a means of articulating the structure of forms and space.

ART 111-112. Design I and II. Credit, 6 semester hours.

This is a basic art course in which the student is introduced to the visual elements of art: texture, line, color, shape, and space and the factors which affect their organization in visual design. The study of design is given in an elementary non-representational manner. Emphasis will be given to the study of color.

ART 122. Layout and Printing Techniques. Credit, 3 semester hours.

This course covers the various advertising art techniques of layout, lettering and design, in relation to printing methods used today in graphic media.

ART 131. Modern Art. Credit, 3 semester hours.

This is a course which seeks to explore the art of the twentieth century in Europe and America, its roots in the past, and its function as an expression of our contemporary civilization.

ART 201-202. Drawing and Painting III & IV. Credit, 6 semester hours.

Prerequisite: Art 101-102.

This course is a continuation of Drawing and Painting I and II and is for the purpose of elaborating and perfecting the techniques developed in the basic course.

ART 211. Lettering. Credit, 3 semester hours.

Prerequisite: Art 111.

This course covers the design and execution of basic hand lettering with pen and brush. The student will also study the utilization of hand lettering and type in the design of printed matter. Emphasis will be put on the use of letter forms as an element of visual design.

Business Administration

BA 101-102. Business Law. Credit, 6 semester hours.

This course involves a study of basic principles of the law of contracts, agency, partnerships, limited partnerships, and corporations.

Contracts will involve a study of the formation of contracts, capacity of parties, offer and acceptance, performance, and discharge. Agency will deal with the appointment of agents, the relationship of principal and agent, power of the agent to bind his principal, duties of agent and principal to one another and to third parties.

Business associations will involve a study of the law relating to the formation and operation of the usual types of business organization. Also considered is the legal relationship among the individuals within the business organization as well as their relationship with third parties.

BA 105. Principles of Selling. Credit, 3 semester hours.

This course presents definite techniques and basic principles of selling and how to get along with people. It includes the study of: prospect selection, knowledge of the product, pre-approach and approach, demonstration, meeting objections, close and departure. Desirable personality traits of the salesman are considered. Class demonstrations and creative salesmanship are stressed.

BA 106. Principles of Marketing. Credit, 3 semester hours.

A study of the fundamental functions of marketing involving the basic principles of the flow of goods and services from producer to consumer. Marketing methods, policies, and problems of the manufacturer, wholesaler and retail dealer are reviewed through analysis of channels of distribution, price policies, competition, and market information.

BA 107. Principles of Advertising. Credit, 3 semester hours.

Advertising practice, the principles underlying it, and the effect of advertising on the public. The nature and problems of production in planning the advertising campaign. The mechanics used in constructing advertisements, visualization, layout, copy, printing and engraving processes, and typography.

BA 108. Advertising Management. Credit, 3 semester hours.

Prerequisite: BA 107.

Covers the efficient use of advertising from the management point of view, as developed in actual business cases. Subjects include: use of advertising to stimulate demand, building of advertising programs, advertising agency relations, advertising budgets, and coordinating sales and advertising.

BA 113. Business Finance. Credit, 3 semester hours.

After a brief study of the unincorporated business enterprise, the modern corporation is studied. The topics covered are: basic security types of stocks and bonds, capital structure, promotion, investment banking, government regulation, administration, sources and uses of working capital, expansion, combinations, mergers, refinancing and recapitalization, failure and reorganization.

BA 118. Business Mathematics. Credit, 3 semester hours.

A study of the fundamental mathematical processes involved in business. The subjects included are: fractions, percentages, interest, bank discount, payroll taxes, financial statements, statistics, graphs, stocks and bonds, recording sales, cash and trade discounts, markup and margins.

BA 119. Office Organization and Management. Credit, 3 semester hours.

This course considers the profession of office supervision and management through the study of the following: functions of the office manager, office organization, departments, methods and systems, costs and budgets, the role of electronic data processing.

BA 131. Public Relations. Credit, 3 semester hours.

This course deals with the main principles of public relations, and how they are applied in specific cases. It shows how the practice of public relations is used by individuals, groups, companies and organizations to gain public understanding and acceptance, and to improve their relations with everyone in a position to affect their welfare. One of the course requirements is a paper evaluating a public relations program.

BA 203. Principles of Transportation. Credit, 3 semester hours.

Prerequisite: EC 133-134.

The economics of transportation development. Problems of freight service, passenger service, carrier management and organization, rate making and rate structures. Problems of regulations of transportation policy .

BA 214. Public Finance. Credit, 3 semester hours.

Prerequisite: EC 133-134.

Public expenditures; public revenues from industrial operation; development of taxation theory and practice.

BA 216. Business Statistics. Credit, 3 semester hours.

Prerequisite: BA 118.

A course offering a sound foundation in statistical methods as applied in business, government, institutional, and research organizations, as well as in personal use. Major topics include the planning of investigations, sampling, sources and the collection of data.

tabulation, ratios, graphs, frequency distribution, measures of central tendency and dispersion, index numbers, time series, seasonal and cyclical movements, trends, correlation, the normal curve, and the statistical report. Practical problems are used to emphasize and impress the textual materials.

BA 221. Law of Sales. Credit, 3 semester hours.

Prerequisite: BA 101-102.

Offered in September of ODD years.

This course is an advanced study of Business Law comprising: bailments; duties and liabilities of bailees, common carriers, and warehousemen; the laws governing the rights of parties engaged in the transfer of personal property. Questions of title, risks assumed, rights of creditors, express and implied warranties, buyers' and sellers' remedies, together with the business background out of which such relations arise, are also considered.

BA 222. Law of Commercial Paper and Bankruptcy. Credit, 3 semester hours.

Prerequisite: BA 101-102.

Offered in February of EVEN years.

This course is a study of the Negotiable Instruments Law, dealing with negotiable promissory notes, bills of exchange and bank checks with an analysis of their form and function in commerical transactions. A brief survey of bankruptcy procedure under the federal bankruptcy laws is included.

BA 301. Retailing. Credit, 3 semester hours.

Prerequisite: BA 105-106.

Modern merchandising methods used by retail stores, including store organization, buying, pricing, receiving, marketing, publicity, selling, record keeping and stock control.

BA 302. Industrial Marketing. Credit, 3 semester hours.

Prerequisite: BA 105-106.

Practices and policies in the distribution of industrial goods, including purchasing practices, market analysis, channels of distribution, distribution and pricing policies, competitive practices and operating costs.

BA 312. International Marketing. Credit, 3 semester hours.

Prerequisite: BA 105-106.

Principles of International Marketing: the theory of trade and commercial policy; foreign exchange rates, exchange control, and foreign investments; world trade in commodities and methods of exporting and importing.

BA 315. Marketing Management. Credit, 3 semester hours.

Prerequisite: BA 105-106.

Policies, practices and problems in the field of marketing management: product development; product planning for promotion; market investigation, quantitative and qualitative; pricing and price policies; planning the marketing effort; and control of marketing operations.

BA 316. Sales Management. Credit, 3 semester hours.

Prerequisite: BA 105-106.

The problems and resulting policies encountered in the management of a sales organization. A study of the qualifications and the duties of the sales manager; departmental organization; recruiting, selecting, training, stimulating, supervising, compensating and routing salesmen; and territories, quotas, expenses, promotion, and policies.

BA 342. Marketing Research. Credit, 3 semester hours.

Prerequisites: BA 105-106, BA 216.

The focus of this course is on the use of qualitative and quantitative analysis of the markets in which business operates.

The following problems will be considered: sales analysis, advertising research, product planning and analysis, sources of data and methods of their collection, sampling techniques, methods of tabulation and analysis, methods of organizing and conducting marketing research, budget considerations, etc., with outside readings and term reports.

BA 512. Business Seminar. Credit, 3 semester hours.

Open to Seniors in Business Administration only.

A seminar course in which the various disciplines are integrated by the student. This course will be conducted on a seminar basis and the student is expected to conduct an independent research project in depth in the area of his major.

Chemistry

CH 101-102. General Chemistry w/Lab. Credit, 8 semester hours.

This is an introductory course which deals with elements, compounds, their properties and reactions. Emphasis is placed on accurate laboratory work.

Laboratory & Breakage Fee: $15.00 per semester.

CH 211-212. Quantitative Analysis w/Lab. Credit, 8 semester hours.

Prerequisite: CH 101-102.

The theory and laboratory training in the preparation of solutions, volumetric and gravimetric analysis, and the use of special equipment is stressed in this course.

Laboratory & Breakage Fee: $15.00 per semester.

CH 221-222. Engineering Chemistry w/Lab. Credit, 6 semester hours.

This is a systematic study of the fundamental principles of chemistry and the chemical reactions of the elements and their compounds together with applications chosen for their theoretical and industrial importance.

Laboratory & Breakage Fee: $15.00 per semester.

CH 231-232. Quantitative Analysis w/Lab. Credit, 6 semester hours.

Prerequisite: CH 101-102 or CH 221-222.

Industrial applications of various laboratory procedures in volumetric and gravimetric analysis are covered in this course. The use of special laboratory equipment is also studied.

Laboratory & Breakage Fee: $15.00 per semester.

CH 301-302. Organic Chemistry w/Lab. Credit, 8 semester hours.

Prerequisite: CH 101-102.

This course covers resonance and molecular orbital theory and emphasizes basic organic reactions as they apply to synthetic procedures. Laboratory work closely follows the lecture in illustrating the application of these reactions.

Laboratory & Breakage Fee: $15.00 per semester.

CH 331-332. Organic Chemistry w/Lab. Credit, 6 semester hours.

Prerequisite: CH 101-102.

The industrial applications of synthetic organic reactions are discussed in addition to resonance and molecular orbital theory. Laboratory work follows the theory discussed in the lectures.

Laboratory & Breakage Fee: $15.00 per semester.

CH 431-432. Physical Chemistry w/Lab. Credit, 6 semester hours.

Prerequisite: CH 101-102, PH 201-202, M 101-102, M 201-202.

Fundamental laws of gases, thermodynamics, the theory of atomic and molecular structure, kinetics, and phase equilibrium are included in this course. Laboratory work enables the student to evaluate this subject by studying physical and chemical data.

Laboratory & Breakage Fee: $15.00 per semester.

Economics

EC 101. The American Economy. Credit, 3 semester hours.

An analysis of the contributions of the leading thinkers in the field; an examination of the resources of the present regions of the world with an explanation of the means of growth, the techniques of growth and the prognosis for future growth; and an analysis of the present day major economic systems.

An analysis of the leading theories developed to explain or justify the Capitalist System of the U. S. There will be an examination of the resources, the growth and development pattern, and the current economic picture of this country.

EC 133. Principles of Economics I. Credit, 3 semester hours.

The foundations of economic analysis including the foundations of economic progress; resources, technology, private enterprise, profits and the price system. An intensive study of macroeconomics including national income, employment and economic growth. A study of price levels, money and banking, the Federal Reserve System, theory of income, employment and prices, business cycles and problems of monetary, fiscal and stabilization policy.

EC 134. Principles of Economics II. Credit, 3 semester hours.

Prerequisite: EC 133.

A study of microeconomics including markets and market structure and the allocation of resources. The distribution of income, the public economy, the international economy and current economic problems are investigated.

EC 211. Government Regulation of Business. Credit, 3 semester hours.

Prerequisite: EC 133.

This course deals with an appraisal of public policy toward transportation, trusts, monopolies, public utilities, and other forms of government regulation of economic activity.

EC 236. Money and Banking. Credit, 3 semester hours.

Prerequisites: EC 133-134 or EC 204.

This course deals with the nature and functions of money, commercial banking system, Federal Reserve System and the Treasury, monetary theory, financial institutions, international financial relationships, history of money and monetary policy in the United States, and current problems of monetary policy.

EC 240. Labor Economics. Credit, 3 semester hours.

Prerequisite: EC 133-134.

A study of the history of the union movement in the United States, union structure and government, problems of collective bargaining, economics of the labor market, wage theories, unemployment, governmental policy and control, problems of security.

EC 442. Economic Thought. Credit, 3 semester hours.

Prerequisite: EC 133-134.

This course describes the development of economic doctrine from mercantilism and Adam Smith to the thinking of modern-day theorists. The emphasis is placed upon the main currents of thought with the applicability to present-day problems. Individual study and reporting are stressed during the semester.

EC 445. Economic Analysis. Credit, 3 semester hours.

Prerequisite: EC 133-134.

Economic Analysis will stress value and distribution theory. Simple geometric tools and equations, introduction to linear programming and econometrics will be introduced to the student. The analysis is related to actual problems in order to make the analysis more real without diluting the theory. The area will include consideration of market structure, theories of production, nature and behavior of cost, price and output determination under various conditions, theory of factory price and income distribution, wage determination, capital goods and investment decisions, theory of interest, rent, and profits.

Electrical Engineering

EE 223-224. Principles of Electrical Engineering. Credit, 6 semester hours.

Prerequisites: PH 222 or PH 106, M 221-222 (M 221-222 may be taken concurrently), or M 102

This course consists of the fundamental concepts of electricity. It includes Ohm's law and Kirchoff's laws, a study of the properties of conductors and insulators, nonlinear resistance circuits, magnetic circuits and fields, induced and generated electromotive force, and the dielectric circuit. A brief survey is made of the AC circuits, DC and AC machines and electronic tubes and circuits.

EE 235. Electrical Machines. Credit, 3 semester hours.

This course cannot be taken for credit by electrical engineering students.

Prerequisite: EE 223-224.

Covers the fundamentals of energy conversion related to the transformer and theory of rotating devices; DC machinery and polyphase induction motors study along with the synchronous motor and generator.

EE 252. Illumination. Credit, 3 semester hours.

Prerequisite: EE 223-224.

This course covers the basic concepts of illumination engineering; light sources; photometry; seeing; principles of illumination; illumination calculations; interior lighting; flood lighting; sports, street, highway lighting; interior wiring for light and power.

EE 330. Introduction to Automation. Credit, 3 semester hours.

Prerequisites: EE 336 and M 202.

This course covers the fundamental principles of automation for industrial engineers. It provides an introduction to the mathematics and techniques of automation for non-electrical engineers as well as a firm foundation in mathematics, physics, chemistry and technology for electrical engineers who plan to pursue the subject further. Problems and equipment demonstrations will accompany class assignments.

EE 331-332. Alternating Current Circuits. Credit, 6 semester hours.

Prerequisites: EE 223-224 and M 323 (M 323 may be taken concurrently) or M 202.

This course covers the fundamental theory of single phase and polyphase alternating current circuits, instruments and measurements. The concepts of vector algebra and Fourier analysis are applied to steady-state solutions of AC networks, and differential equations are applied to the transient analysis of circuit elements.

EE 336. Instrumentation Electronics. Credit, 3 semester hours.

Prerequisite: EE 224.

An introduction into instrumentation electronics aiming to provide a working knowledge and understanding of electronic instruments and controls as used in industrial processes. Starting with simple electrical measurements, the course subsequently deals with power supplies, transistor and vacuum tube amplifiers and oscillators. Practical servo systems and operational amplifiers are treated as well as simple circuits for electronic switching, timing and digital counting.

EE 341. Direct Current Machines. Credit, 3 semester hours.

Prerequisite: EE 223.

Processes for the electro-mechanical conversion of energy. The fields, forces, and torques in magnetic systems. Theory, characteristics, applications, and design of direct-current machines.

EE 342. Alternating Current Machines. Credit, 3 semester hours.

Prerequisite: EE 224.

Theory, performance, and applications of transformers, AC generators, synchronous motors, single and polyphase induction motors.

EE 343-344. Electrical Machinery. Credit, 8 semester hours.

(With laboratory periods each semester.)

Prerequisite: EE 224.

Processes for the electro-mechanical conversion of energy. The fields, forces, and torques in magnetic systems. Theory, characteristics, applications, and design of direct-current machines. Theory, performance, and applications of transformers, AC generators, synchronous motors, single and polyphase induction motors. The laboratory experiments and problems cover analysis of DC and AC networks by loop and nodal equations and methods of solutions. Matrix notation. Experimental verification of network theory and its application to electrical machines.

EE 347-348. Electronic Engineering. Credit, 6 semester hours.

Prerequisite: EE 224 or EE 331-332. (EE 331-332 may be taken concurrently.)

This course is largely concerned with the discussion of basic circuits making up more complex electronic devices. A large part of the course is assigned to the analysis of apparatus used in practice, both in industry and communications. Magnetic, audio and servo amplifiers as well as high-frequency systems will be analyzed during the second semester.

EE 429. Measuring Principles and Transducers. Credit, 3 semester hours.

Prerequisites: EE 336, M 202, EE 330 or EE 451-452.

This course covers the principles of measuring elements and transducers for electrical engineers. Mechanical and industrial engineers who have the necessary prerequisites will also be able to profit from the course. It provides an introduction to the science of measurement (metrology), and the application of this science to the measurement of quantities of economic value in industrial, military and scientific processes. Laboratory sessions will provide the student with first-hand familiarization with the principles of the subject.

EE 430. Automatic Control and Simulation. Credit, 3 semester hours.

Prerequisite: EE 429

This course covers the principles of automatic control and simulation needed for the automation of electrical, mechanical, pneumatic or hydraulic systems in science, military or industrial applications. Although the course is designed primarily for electrical engineers, it may be taken with profit by mechanical and industrial engineers who have the necessary background. The course provides an introduction to the science of automatic control and the application of this science to the optimization of linear and non-linear systems. Laboratory sessions provide the students with first-hand experience with the principles and hardware used in automatic control systems.

EE 437. Industrial Power Systems Engineering. Credit, 3 semester hours.

Prerequisite: EE 331-332.

Structure of power and distribution of systems; symmetrical components; analysis of unbalanced polyphase power systems; fault calculations; applications to problems of grounding, relaying and unbalanced operation of apparatus.

EE 438. Electric Power Transmission. Credit, 3 semester hours.

Prerequisite: EE 437 or EE 331-332.

This course considers the fundamentals of electric power generation, transmission and distribution. The course presents the characteristics of transmission lines, electrical equipment, materials, and their economic application to form a coordinate utility system.

EE 441-442. Electronic Computers. Credit, 6 semester hours.

Prerequisites: EE 347-348 and M 202 or M 324.

This course includes a study of the systems for solving complex mathematical problems by electronic techniques; the fundamental properties of differential analyzers, analog and digital computers with particular emphasis on the logical structure of components (such as adders, multipliers, counters, registers, etc.) and the interrelations necessary for fully automatic operations. Laboratory work is also included.

EE 445-446. Communications Circuits. Credit, 6 semester hours.

Prerequisites: EE 347-348 and M 202 or M 324.

This course includes the analysis of communication circuits and the design of the components of communication systems, performance testing of receivers, transmitters, power amplifiers and other elements of telephone, carrier current, telemetering, radio, microwaves and television equipment.

EE 450. Transistor Electronics. Credit, 3 semester hours.

Prerequisite: EE 331-332.

This course includes the theory of semi-conductors, and the properties of semiconductor devices; characteristics of point contact and junction transistors; the four-terminal networks, equivalent circuits, stability, power gain and cascading problems. Low frequency amplifiers. High frequency circuits, high frequency amplifiers. Application of semi-conductor devices in amplifiers, oscillators, magnetic amplifiers and computers.

EE 451-452. Engineering Analysis. Credit, 6 semester hours.

Prerequisites: M 202 or M 324 and EE 224.

This course is limited to Junior engineering students—others by special permission only.

A course designed to give the student a working knowledge of the methods used in the analysis of linear systems. A brief review of the methods used in the solution of ordinary differential equations. Development of the Fourier Series and integrals, with application to electrical circuits and functions. Development of analogies to electrical circuits for mechanical and electro mechanical systems. Thorough coverage of LaPlace Transforms and methods of solving network problems including the concept of the transfer function and block diagram representation. Systems with feedback and sampled data systems are covered.

EE 455-456. Servomechanisms and Feedback Control Systems. Credit, 6 semester hours.

Prerequisite: EE 451-452.

This course includes the differential equations of dynamical systems, analogues, linearization techniques, block diagram representation, concept of transfer function, classical servomechanisms, transient analysis and synthesis, frequency spectrum analysis and synthesis, stability criteria, transfer loci, compensation methods, use of inverse plane. Bode plot, straight line approximations, gain-phase relationships, Nyquist plots and root-locus technique. Correlation between root-locus and frequency loci, compensation using root-locus, multiple loop systems, block diagram reduction techniques, multipole systems, and the use of describing function for linearization.

EE 458. Servomechanism Components. Credit, 3 semester hours.

Prerequisite: EE 455.

The course covers the design and testing of overall feedback control systems and recording instruments, including direct coupled vacuum tube and transistor amplifiers, modulators, magnetic amplifiers, transducers, resolvers, synchros, servomotors, and hydraulic assemblies.

EE 461. Waves and Fields. Credit, 3 semester hours.

Prerequisites: EE 331-332 and M 202 or M 324.

This course covers the study of basic electromagnetic theory as related to the static fields of electric charges and the magnetic fields of steady electric currents. Included are fundamental field laws. Maxwell's equations; energy distributions; scalar and vector potentials; method of images; boundary relations; magnetization; polarization; time varying electric and magnetic fields; field plotting. Vector mathematics is used in the mathematical analysis.

EE 462. Microwave Fundamentals. Credit, 3 semester hours.

Prerequisites: EE 461 or EE 331-332 and M 324.

This course covers the development and application of electromagnetic-field theory to the analysis of high-frequency circuits, wave propagation, reflection in various media including wave-guides, and resonant cavities. Also included is the theory of operation of such devices as klystrone, magnetron, and traveling wave tubes.

EE 504. Laboratory Thesis. Credit, 3 semester hours.

Open to seniors in Electrical Engineering only.

Advanced laboratory testing and special problems. The student works on problems of his own selection which have been approved by the instructor. The student's work may be in the form of a semester thesis or a series of original experiments.

English

EA. Basic Grammar. One semester. No credit.

The objectives of this course are: first, to teach the fundamental principles upon which good English is based; second, to give practical experience in the use of themes, recitations, notebooks, and conferences; and to train in the use of the dictionary. Special work is prescribed for those whose preparation is inadequate and for those who show need of review.

EB. Reading Laboratory. One semester. No credit.

This course aims at helping the student to read faster and to increase comprehension. The objectives are more effective study habits, increased vocabulary, the enjoyment of reading and the development of independent thinking. The course includes reading and exercises in the text, vocabulary exercises, supervised reading for speed, training films and discussion.

E 113. English Composition. Credit, 3 semester hours.

Prerequisite: Satisfactory performance on English Placement Examination, either at admission or at the completion of EA Basic Grammar.

This course is designed primarily to help students learn to write by writing—to develop the ability to organize thoughts quickly and effectively, to write with speed and facility, and to use simple written English.

E 114. Speech. Credit, 3 semester hours.

This course serves as an introduction to the principles of speech. The objectives are: to develop in the student proficiency in the use of vocal and bodily aids in various speaking situations, and to help the student gain confidence and fluency when speaking extemporaneously, as in group discussions, or in everyday conversation. Recordings are used for self-analysis and criticism.

E 118. Modern Literature. Credit, 3 semester hours.

This course is designed to give the student a general understanding of the various kinds of literature being written today and to acquaint him with representative samples of recent fiction, biography, essays, poetry, and drama. The reading and classroom discussion will be supplemented by lectures which will attempt to provide certain theories of criticism and to increase the student's enjoyment and appreciation of literature.

E 201-202. Humanities. Credit, 6 semester hours.

Prerequisite: E 113.

An approach to man's perennial search to find meaning for his place in the universe and perspective for his systems of knowledge. Dealing with selected intellectual, ethical and aesthetic problems, the student is introduced to some classics in literature, history, philosophy and art which provide the foundations of contemporary culture. Extensive reading in primary sources is expected.

E 206. English Composition and Literature. Credit, 3 semester hours.

Prerequisite: E 113.

This course aims to increase the student's understanding of English as a means of communication and to increase his skill in reading and writing. Training is given in the analysis and interpretation of literature.

E 211. Major British Writers I. Credit, 3 semester hours.

Prerequisite: E 113.

This course is a study of major British writers from the beginning to the period of Romanticism, with emphasis on the works of Chaucer, Spenser, Shakespeare, Milton, Donne, Dryden, Pope, and Swift.

E 212. Major British Writers. Credit, 3 semester hours.

Prerequisite: E 113.

This course is a study of major British writers from the period of Romanticism to the present day, with emphasis on the works of Blake, Wordsworth, Coleridge, Shelley, Keats, Byron, Tennyson, Browning, Arnold, Hardy, Housman, Yeats, and Eliot.

E 220. Technical Report Writing. Credit, 3 semester hours.

Prerequisite: E 113.

Included in this course of writing for the engineering, management and business student is the study and analysis of the professional scientific paper, the preparation of reports on the technical and semi-technical level and an introduction to the principles of business letter writing. Emphasis is placed on the study and writing of the internal plant memorandum and report.

E 242. Shakespeare. Credit, 3 semester hours.

Prerequisites: E 113, E 206, or E 220.

This course is designed to introduce to the student Shakespeare's most representative comedies, history plays and tragedies and to enable him to examine intensively such works as *Twelfth Night, The Winter's Tale, Richard II, Henry IV, Henry V, Hamlet, Lear, Othello, Antony and Cleopatra, The Tempest* and the Sonnets. Emphasis will be placed on the tragedies.

Foreign Languages

FR 101-102. Elementary French. Credit, 6 semester hours.

Offered in September of ODD years.

An introduction to French stressing pronunciation, aural comprehension, and basic conversation; instruction in the fundamental principles of grammar; training in reading comprehension. *Not open to students who offer for college etrance more than one year of high school French.*

FR 201-202. Intermediate French. Credit, 6 semester hours.

Offered in September of EVEN years.

Prerequisite: French 101-102 or equivalent.

Conversation based on the reading of modern prose texts; drill in written and oral self-expression; a review of the principles of grammar.

GR 101-102. Elementary German. Credit, 6 semester hours.

Offered in September of EVEN years.

An introduction to German stressing pronunciation, aural comprehension, and basic conversation; instruction in the fundamental principles of grammar; training in reading comprehension. *Not open to students who offer for college entrance more than one year of high school German.*

GR 201-202. Intermediate German. Credit, 6 semester hours.

Offered in September of ODD years.

Prerequisite: SP 101-102, or equivalent.

A more advanced course for students with two years of high school German or one year of college German. Emphasis is on conversation, with advanced study of grammar and composition.

RU 101-102. Elementary Russian. Credit, 6 semester hours.

An introduction to Russian stressing pronunciation, aural comprehension, and conversation; instruction in the fundamental principles of grammar; training in reading comprehension.

SP 101-102. Elementary Spanish. Credit, 6 semester hours.

Offered in September of EVEN years.

An introduction to Spanish stressing pronunciation, aural comprehension, and basic conversation; instruction in the fundamental principles of grammar; training in reading comprehension. *Not open to students who offer for college entrance more than one year of high school Spanish.*

SP 201-202. Intermediate Spanish. Credit, 6 semester hours.

Offered in September of ODD years.

Prerequisite: GR 101-102, or equivalent.

A more advanced course for students with two years of high school Spanish or one year of college Spanish. Emphasis is on conversation, with advanced study of grammar and composition. Works of prominent Spanish-American authors will be read.

Industrial Engineering

IE 114. Management Survey. Credit, 3 semester hours.

This is an introductory course in management. It introduces the student to all the major functions of industry, their interrelationship, and how they are brought together through organization. Thus the student receives instruction in the preliminaries of methods, cost, production control, product development, finance, physical facilities, quality control, plant engineering, industrial relations, job evaluation, sales, advertising, budgets, and records.

IE 119. Industrial Safety and Hygiene. Credit, 3 semester hours.

This is a basic course in industrial accident prevention and industrial hygiene and covers: managerial accident prevention, functions and responsibilities; injury data development, usage, and validity; machine guarding techniques and guard development, including point-of-operation, drives; personal protective equipment; fire prevention and control, including flammable solvents, dusts and their characteristics; electrical hazards; hand tools, power and manual; employee training; communications; hazard analysis; accident investigation. Industrial hygiene problems caused by solvents, dusts, noise, radiation are studied as well as bodies, laws and catastrophe hazards.

IE 204. Engineering Economics. Credit, 3 semester hours.

Prerequisite: M 101-102 or BA 118.

A quantitative analysis of applied economics in engineering practice; the economy study for comparing alternatives; interest formulas; quantitative methods of comparing alternatives; intangible considerations; selection and replacement economy for machines and structures; break-even and minimum cost points; depreciation; relationship of accounting to the economy study; review of current industrial practices. Aims to promote logical decisions from the consideration of alternative courses of action.

IE 221. Data Processing. Credit, 3 semester hours.

Prerequisite: M 101-102 or BA 118.

The purpose of this course is to give an overall picture about Data Processing which includes punched cards, paper tape, magnetic tape and its use in Data Processing. The student will be introduced to all characteristics of punched cards, card-layout, and the flow of punched cards through a data processing department, including machines used for card handling, such as key-punch, card-verifier, card sorter, collator, interpreter, accounting machines. Jobs will be analyzed and the student will be introduced to flow-charting.

IE 224. Programming. Credit, 3 semester hours.

Prerequisite: IE 221.

This course will introduce the student to the computer programming, starting with the preparation of block diagrams, program coding, program compiling and debugging.

At least two different programming languages will be learned and actual jobs programmed. The programs, written by the students, will then be tested and debugged on a computer.

IE 233. Cost Control. Credit, 3 semester hours.

Prerequisite: A 112 or A 113, and IE 114.

A large percentage of the cost of a product is incurred by the supervisors and foremen through whose departments the product passes on its way from raw material to finished state. To control and reduce this cost is an important part of their job. Only if they understand all the factors comprising such costs can they accomplish this end. This course will familiarize students with the elements of cost necessary to control, stressing particularly the indirect or overhead elements—their measurement and control.

IE 234. Production Control. Credit, 3 semester hours.

Prerequisite: IE 114.

The instruction stresses the basic principles that govern production control in an industrial plant. These principles are worked out in the problems of procuring and controlling materials, in routing, scheduling, and dispatching. The intent of the course is to familiarize the student with the use of the most up-to-date methods in this field, including visual control systems.

IE 241. Methods and Motion Study. Credit, 3 semester hours.

Prerequisite: IE 114.

The purpose of this course is to develop an acute awareness of motion economy and an understanding of the principles of methods analysis in industrial operations. Each student is responsible for a project based on a practical shop operation. Through analysis, he will demonstrate the principles of motion economy. Methods analysis techniques include operations analysis, man-machine, gang and operator process charts. Motion study techniques include micromotion filming and analysis of student projects memomotion filming and synthetic basic motion study analysis. Job analysis and job evaluation techniques are introduced and applied to actual industrial labor problems.

Methods Laboratory and Breakage Fee: $5.00

IE 342. Work Measurement. Credit, 3 semester hours.

Prerequisite: IE 241.

A basic course in the measurement of work by the stopwatch and synthetic basic motion systems. Actual shop operations are analyzed in the laboratory for elemental breakdown. Performance rating is practiced from films and from actual shop operations. The various techniques of applying allowances and developing the standard time are practiced. Standard data is developed from laboratory studies and applied to formula construction and application. Work sampling techniques are demonstrated and applied. Establishing of standards on indirect work, the extensive application of time standards and a survey of significant wage payment plans are also an integral part of the course.

IE 346. Statistical Analysis. Credit, 3 semester hours.

Prerequisite: M 202 or M 324.

This course provides an introduction to the application of statistical techniques to industrial and engineering problems, probability and distribution theory, measures of central tendency and dispersion in relation to population and samples, as well as applications of algebraic methods in industrial practice including game theory, mathematical programming, and advanced statistical methods.

IE 351. Synthetic Motion—Time Systems. Credit, 3 semester hours.

Prerequisite: IE 241.

This is essentially a course in the Methods-Time-Measurement and the Elemental Time Standards systems of work measurement. The theory and technique learned in the classroom are practiced in the laboratory in measuring actual factory operations. These applications are extended to illustrate standard data usage, standard cost methods and the principles of motion economy.

IE 436. Quality Control. Credit, 3 semester hours.

Offered in Spring of EVEN years.

Prerequisite: IE 346.

This course covers economics of quality control; modern methods used by industry to achieve quality of product; preventing defects; organizing for quality; locating chronic sources of trouble; co-ordinating specifications, manufacturing, and inspection; measuring process capability using inspection data to regulate manufacturing processes; control charts; selection of modern sampling plans.

IE 443. Factory Planning. Credit, 3 semester hours.

Prerequisite: IE 342.

Factors in plant location, design and layout of equipment. The basic principles of obtaining information essential for carrying out such investigations. This is a survey course which also covers briefly such practices as material handling, storage and storeroom, maintenance, and service departments in modern factories.

Laboratory Fee: $3.00

IE 502. Operations Research. Credit, 3 semester hours.

Prerequisite: BA 216 or IE 346.

The Operations Research area is oriented to various mathematical and near-mathematical methods for getting answers to certain kinds of business problems. The following areas are studied: simulation including Montcarlo, Queuing, the flood method for assigning jobs, the transportation method, and linear programming including the simplex method with both algebraic solution and tableaus.

IE 504. Laboratory—Thesis. Credit, 3 semester hours.

Advanced laboratory testing and special problems. The student works on problems of his own selection which have been outlined by him and have received approval. They may be in the form of a semester thesis or a series of original experiments.

IE 507. Systems Analysis. Credit, 3 semester hours.

Prerequisite: IE 342, and IE 221 recommended.

The Systems Analysis area is concerned with the flow-of-information kind of systems analysis and the complex product-scheduling kinds of systems analysis. The areas covered are computers and integrated systems, procedures, systems analysis and development, program evaluation, review techniques, forms and filing.

IE 510. Business Games. Credit, 3 semester hours.

Prerequisite: IE 502.

The Business Games area gives the student the opportunity of correlating his entire course of study in a management simulation framework. These training games make use of simulation models that explore specific management areas in depth. The purposes of these games are as follows: (1) to serve as a framework for training sessions in basic management principles; (2) to serve as an introduction to the problems of manufacturing management; (3) to serve as a focal point for management development discussion of long range planning and decision assisting tools; (4) to show the student the use of modern electronic computer methods.

Journalism

J 101. Journalism. Credit, 3 semester hours.

This course begins with a survey of journalism designed to acquaint students with what the profession offers. The American newspaper as a social institution and a communication medium are studied, together with the reporting of public affairs and elementary editing.

J 201. News Writing and Reporting. Credit, 3 semester hours.
Prerequisites: J 101, E 113.

Included in this course are the elements of news, the style and the structure of news stories, news gathering methods, copyreading and editing. The course offers some practical experience in reporting, writing, and editing.

J 301. Advanced Journalism and Feature Writing. Credit, 3 semester hours.
Prerequisites: J 201, E 113.

This course covers the theory of copy reading, editing, feature writing, headline writing, and reporting. Practical problems in feature writing, reporting, and editing are emphasized.

Mathematics

M A-B. Basic Mathematics I. No credit. Meets 2 nights a week per semester.
This course in mathematical methods represents the fundamental operations of algebra and the application of these operations to problems. Topics discussed include the theory of equations, factoring, and fractions. In geometry the concept of proof is emphasized and applied, and the properties of the triangle are considered.

M C-D. Basic Mathematics II. No credit. Meets 2 nights a week per semester
Prerequisite: M A-B or equivalent.

The study of algebra is continued in this course and includes the following subjects: the quadratic equation, ratio and proportion, variation, and the trigonometry of the right triangle. In geometry the circle is discussed and studied, and consideration is given to similar figures and areas.

MR A. Mathematics Review I. No credit. Meets 3 hours per week.
This course covers a review of the number system, fractions, exponents, logarithms, the fundamental operations of algebra and an introduction to the theory of equations.

MR B. Mathematics Review II. No credit. Meets 5 hours per week.
Prerequisite: MR A or equivalent.

This course covers topics of plane geometry, further study of algebra, trigonometry and an introduction to analytical and solid geometry.

M 101. College Algebra and Calculus I. Credit, 4 semester hours.
Prerequisite: MR B or equivalent.

This course reviews the fundamental relations in algebraic operations, analytic geometry, simultaneous equations, determinants, quadratic equations, complex quantities, partial fractions, inequalities, points graphs, rectangular and polar coordinates, and introduces the formal differentiation and integration of the calculus.

M 102. Calculus II. Credit, 4 semester hours.
Prerequisite: M 101.

This course includes the fundamental notions of the calculus, differentiation and integration of algebraic functions, differentials, maxima and minima. Applications are made to simple problems in geometry and mechanics, such as the determination of velocity, accelerations, areas, volumes, and pressures. The analytic geometry of the straight line and of the conic sections is introduced as an attribute to the calculus. Vector algebra, scalar products, vector products, and differentiation of vectors are covered.

M 109. General Mathematics II. Credit, 3 semester hours.
Prerequisite: M RA or equivalent.
This course cannot be taken for credit by engineering students.

Review of fundamental operations in algebra. Topics discussed are special products, factoring, exponents, radicals, logarithms, ratio and proportion, inequalities, linear and quadratic equations.

M 111. College Algebra. Credit, 3 semester hours.
Prerequisite: M C-D or equivalent.

The fundamental operations of algebra are thoroughly reviewed and various topics such as the function concept, variation, synthetic division, complex numbers and determinants are studied. Special emphasis is placed on the solution of verbal problems.

M 113. Trigonometry. Credit, 3 semester hours.
Prerequisite: M C-D or equivalent.

This course is devoted entirely to the study of trigonometry. The topics studied include trigonometric functions, fundamental relations, solutions of right and oblique triangles, trigonometric reductions, angular measure, graphs of the functions, composite angles, inverse functions, logarithms and the use of the slide rule.

M 121-122. Algebraic Structures. Credit, 6 semester hours.
Prerequisite: MR B or equivalent.

A first course in modern algebra. Topics covered are: sets, mappings, operations and relations, elementary logic, number systems (natural, integers, rational, real and complex), abstract systems (groups, integral domains, rings and fields).

M 123. Linear Algebra. Credit, 3 semester hours.
Prerequisite: MR B or equivalent.

This course includes the study of matrices, linear systems, determinants, vector spaces, vector geometry, linear transformations, linear programming and game theory. Applications are presented.

M 201. Calculus III. Credit, 4 semester hours.
Prerequisite: M 102.

This course concludes the study of integration methods, including numerical methods. The course also includes Infinite Series; analytical geometry of three dimensions; double and triple integration with application to areas, volume, moments of inertia and centers of gravity; and partial differentiation. Complex variables are introduced.

M 202. Differential Equations. Credit, 3 semester hours.
Prerequisite: M 201 or M 323.

This course includes the solution of ordinary differential equations including the principal types of first and second-order equations, simultaneous equations, and linear equations with constant coefficients, and an introduction to operational methods by means of the LaPlace Transformation. The Fourier Series and Transforms are developed.

M 221. Calculus and Analytical Geometry. Credit, 3 semester hours.
Prerequisites: M 111 and M 113.

This course includes the fundamental notions of the calculus, differentiation and integration of algebraic functions, differentials, maxima and minima. Applications are made to simple problems in geometry and mechanics, such as the determination of velocity, accelerations, areas, volumes, and pressures. The analytic geometry of the straight line and of the conic sections is introduced as an attribute to the calculus.

M 222. Differential and Integral Calculus. Credit. 3 semester hours.
Prerequisite: M 221.

This course continues the study of the calculus including transcendental functions, formal integration methods and numerical methods of integration. Vector algebra including scalar products, vector products and differentiation of vectors is covered.

M 227-228. Mathematics for Computers I and II. Credit, 6 semester hours.
Prerequisite: M 109 or equivalent.

A two-semester course designed to improve the student's analytical faculties and prepare him for subsequent courses in statistics and managerial economics. First semester:

theory of sets; introduction to finite probability. Second semester: mathematical concepts based on the differential and integral calculus as related to business problems.

M 231. Probability and Statistics. Credit, 3 semester hours.

Prerequisite: M 102.

Basic concepts of probability, independent trials, functions on the sample space, distribution functions, continuous sample spaces and basic theories are covered in this course. Elementary statistics, statistical inference and models, and applications are also included.

M 237. Scientific Programming. Credit, 3 semester hours.

Prerequisite: M 102.

Basic engineering systems are analyzed in terms of discrete, rather than continuous, data. Using elementary numerical analysis techniques, the student reduces the engineering system to a flow diagram and writes the FORTRAN program language representing the system. The program is then coded and debugged on the digital computer. FORTRAN language and rules as contained in the scanner and compiler are studied by experimental methods on the computing machine.

M 323. Advanced Mathematics for Engineers I. Credit, 3 semester hours.

Prerequisite: M 222.

This course reviews integration methods. Included are infinite series, analytical geometry of three dimensions: double and triple integration with application to areas, volume, moments of inertia and centers of gravity; and partial differentiation. Complex variables are introduced.

M 324. Advanced Mathematics for Engineers II. Credit, 3 semester hours.

Prerequisite: M 201 or M 323.

This course includes the solution of ordinary differential equations including the principal types of first and second-order equations, simultaneous equations, and linear equations with constant coefficients, and the introduction to operational methods by means of the LaPlace Transformation. The Fourier Series and Transforms are developed.

M 338. Numerical Analysis. Credit, 3 semester hours.

Prerequisite: M 202.

Solution of complex engineering problems by analog or digital computers requires a study of methods of representation and techniques of solution of mathematical expressions. The least squares method is used to curve fit raw test data. Analytical expressions can be interpolated between discrete values by linear or Lagrange polynominals. Systems of linear algebraic or transcendental equations are solved by iteration or matrix inversion. Differential equations can be handled by the method of finite differences, relaxation techniques, or by reduction to eigenfunctions. Integration and differentiation may be approximated geometrically. Errors are estimated and controlled to ensure reliability of results.

M 411-412. Advanced Calculus. Credit, 6 semester hours.

Prerequisite: M 202 or M 324.

Course limited to Junior engineering students—others by special permission only.

A course designed to give the student a working knowledge of the principal mathematical methods used in advanced engineering and physics. Topics include a review of methods used to solve ordinary differential equations, infinite series and functions of several variables. Major emphasis is on series solution of differential equations, partial differential equations, vectors and matrices, probability and numerical methods.

M 423. Complex Variables. Credit, 3 semester hours.

Prerequisite: M 202 or M 324.

This course covers the analytic functions of a complex variable and infinite series in the complex plane.

Mechanical Engineering

EM 101. Engineering Drawing. Credit, 2 semester hours.

This is an elementary course in engineering drawing designed to teach the use of instruments, the fundamental principles of projection, drafting room standards and conventions, lettering, selection and use of scales, orthographic projections, revolutions, developed surfaces, intersections and auxiliary views, and the making and dimensioning of complete working drawings of simple machine parts. (3-4 lab. hours.)

EM 102. Drawing and Descriptive Geometry. Credit, 2 semester hours.

Prerequisite: EM 101 or equivalent.

This course is a continuation of Engineering Drawing but includes the basic principles of space relationships with emphasis on the solution of engineering problems. Principal views; auxiliary views, oblique views, line and plane problems, revolution, surfaces and developments, surfaces and intersections, and warped surfaces, are studied. (3-4 lab. hours.)

EM 123. Engineering Materials. Credit, 3 semester hours.

A survey course of the principal engineering materials of modern technology. Physical testing and the evaluation of tests, metals and alloys, cement, concrete, wood, ceramics and plastics are studied. The course is designed to give engineers sufficient background in these materials to aid them in selecting and setting specifications. Laboratory sessions enable the students to witness and perform mechanical tests, heat treatments, hardenability tests, and cold rolling and annealing operations.

EM 124. Mechanical Processes. Credit, 3 semester hours

A survey of mill and manufacturing processes. The casting of metals, pattern making and mold preparation, hot working and cold working by plastic deformation, powder metallurgy and plastic molding comprise the first half of the course. Secondly, machining by metal chip formation is studied. The machine tools such as the lathe, milling machine, planer, shaper, saw, and grinder are studied in detail.

EM 221. Mechanics—Statics. Credit, 3 semester hours.

Prerequisites: M 102 or M 222 and PH 106 or PH 222.

This course covers the algebra of vectors, the composition and resolution of forces; equilibrium of force systems; principle of virtual work, potential energy, stability; distributed forces, centroids, moments of inertia, hydrostatics; friction effects in statics; elementary theory of structures, method of joints, sections; shear force and bending moment; flexible cables; vector methods applied in three dimensional problems.

EM 234. Mechanics of Materials. Credit, 3 semester hours.

Prerequisite: EM 221.

This course considers the theory of stress and resistance of materials; stress distribution and riveted joints, shafts, beams, and columns; and principal stresses.

EM 235. Mechanical Engineering Laboratory No. 1. Credit, 1 semester hour.

To be taken concurrently with EM 234.

Basic instrumentation for measurement of mechanical properties of materials. Experiments in stress and strain measurements and both static and dynamic properties of materials.

NOTE: Part-time and evening students are charged for a standard 3 semester hour course.

EM 322. Mechanics—Dynamics. 3 semester hours.

Prerequisites: PH 106 or PH 222 and M 202 or M 324.

A study is made of vector calculus and the application of the principles of dynamics to the analysis of special topics in machines, such as the effect of inertia, flywheel design, balancing, governors, and gyroscope effects. An introduction to vibration and critical speeds is presented.

EM 331-332. Thermodynamics. Credit, 6 semester hours.

Prerequisites: PH 106 or PH 222 and M 202 or M 324.

This course begins with the study of fundamental concepts; transformations of energy; the first and second laws of thermodynamics; processes and cycles of gases and vapors. With this groundwork established, the course proceeds to deal with various applications such as compressors, gas turbines, jet engines, internal combustion engines, steam turbines and refrigeration systems.

EM 333-334. Machine Design. Credit, 6 semester hours.

Prerequisites: EM 234 and EM 322.

Offered in September of EVEN years, evenings.

The first semester of this course consists of a study of the elements of design. The second semester considers the analysis and design of such elements as fastenings, bearings, gears, shafts, clutches, pulleys, and cams. Some machine parts are studied from the standpoint of kinematics, and their motions are analyzed.

EM 337. Heat Power. Credit, 3 semester hours.

Prerequisites: M 102, PH 206.

A short course in elementary engineering thermodynamics for industrial and electrical engineering students. Study of the basic laws of mass and energy conservation, the properties of fluids in closed and open systems, and the transformation of energy in processes and cycles. Thermodynamic analysis of power generation in internal combustion engines, gas turbines and rockets. Evaluation of refrigeration and cryogenic systems including thermoelectric heating and cooling apparatus.

EM 335-336. Tool Design. Credit, 6 semester hours.

Prerequisites: EM 101-102, EM 124, and EM 221.

Offered in September of ODD years, evenings.

The objective of this course is to present and develop the basic techniques of tool design through lectures, class discussions, and student design problems. Major topics considered are: methods analysis, drill jib design, tolerances and allowances, cutting tools, die design, gages and gaging policies, milling fixtures, turret lathe tooling, and cam designs for automatic screw machines.

EM 343. Mechanisms (Kinematics). Credit, 3 semester hours.

Prerequisites: EM 221 and M 201 or M 323.

Offered in September of ODD years, evenings.

Linkages comprising mechanisms are studied as well as the graphical analysis of displacements, velocities and acceleration in mechanisms, including the use of instantaneous centers. Design of cams is considered, and an analysis is made of belt drives, gear profile action, and gear trains.

EM 405. Fluid Mechanics. Credit, 3 semester hours.

Prerequisite: EM 322. Fall only.

Fundamentals, fluid statics, viscosity, flow of an ideal fluid, flow of a real fluid, dimensional analysis, measuring devices, flow in pipes, open channel flow, dynamic action of fluids, and centrifugal pumps.

EM 406. Aerodynamics. Credit, 3 semester hours.

Prerequisite: EM 405.

The continuation of fluid mechanics to the compressible flow regime. Considering the one dimensional flow relations of viscous fluids from the laminar region through the transition to turbulent flow and into elementary shock theory in ducts and nozzles. Linearized subsonic and supersonic flow theory. Momentum and propulsions by fluids over airfoils, vanes and blades. Fundamentals of lift and drag coefficients of aircraft.

EM 407. Mechanical Engineering Laboratory No. 3. Credit, 1 semester hour.

Prerequisites: EM 331-332.

To be taken concurrently with EM 405.

Basic instrumentation and methods for measurement of static, dynamic and physical phenomenon will be demonstrated by selected laboratory experiments.

NOTE: Part-time and evening students are charged for a standard 3 semester hour course.

EM 416. Heat Transfer. Credit, 3 semester hours.

Prerequisite: EM 332.

Conduction, convection, and radiation as different types of heat transfer. Steady-and-unsteady-state conduction problems in solids. Solutions will be developed by analytical, numerical, and graphical methods. The course covers dimensional analysis of convection problems; analogy between heat transfer and fluid friction; heat transfer in tubes and on external surfaces; combined conduction and convection effects; and heat exchanges and cooling fins.

EM 418. Mechanical Engineering Laboratory No. 4. Credit, 1 semester hour.

Prerequisite: EM 407.

To be taken concurrently with EM 416.

The purpose of this laboratory is to study and apply methods of testing and to use instruments and apparatus required in the fields of heat transfer, fluid flow and energy conversion.

NOTE: Part-time and evening students are charged for a standard 3 semester hour course.

EM 422. Mechanics of Vibration. Credit, 3 semester hours.

Prerequisites: EM 234, EM 322, and M 324 or M 202.

The objective of this course is to present and develop the mathematical relationships necessary for the solution of problems involving the vibration of lumped and continuous systems; damping; free and forced motion; resonance, vibration isolation; matrix method; Rayleigh's principle. Balancing of rotating and reciprocating machinery is included.

EM 424. Mechanical Engineering Laboratory No. 2. Credit, 1 semester hour.

Prerequisite: EM 235.

To be taken concurrently with EM 422.

Demonstrations and experiments in the field of mechanical vibration and machine balancing. A vibration problem to be solved analytically and verified experimentally.

NOTE: Part-time and evening students are charged for a standard 3 semester hour course.

EM 426. Mechanical Engineering Laboratories No. 1 & 2. Credit, 2 semester hours.

To be taken concurrently with, or following, EM 422.

A combination of laboratory courses No. EM 235 and 424 for evening students.

NOTE: Students are charged for a standard 3 semester hour course.

EM 429. Mechanical Engineering Laboratoires No. 3 & 4. Credit, 2 semester hours.

Prerequisites: EM 331-332.

To be taken concurrently with, or following, EM 416.

A combination of laboratory courses No. EM 407 and 418 for evening students.

NOTE: Students are charged for a standard 3 semester hour course.

EM 441-442. Advanced Machine Design. Credit, 6 semester hours.

Prerequisite: EM 333-334.

Offered in September of ODD years.

Following a review of the elements of machine design studied in the first year, complete designs are individually selected and developed by the student. Advanced problems, such as balancing and critical speeds, are considered the latter part of the year.

EM 445-446. Tool Engineering. Credit, 6 semester hours.

Prerequisites: EM 234, EM 322, and EM 335-336.

Offered in September of EVEN years.

This course will consider the interrelationships of tool design with the pertinent elements of tool engineering such as planning, processing, estimating, and tooling costs. Student tool design work will be of a group nature entailing the complete planning and designing necessary to manufacture machine parts and die work. Major topics considered are: locating and clamping theory, tooling economics, tool estimating, and process planning.

EM 512. Senior Seminar. Credit, 3 semester hours.

Open to Seniors in Mechanical Engineering only.

An independent design, theoretical analysis or laboratory investigation in the field of the student's major interest. Subject to be approved by the Chairman of the department, with the work accomplished under the guidance of a staff member.

Metallurgy

MT 219. Physical Metallurgy. Credit, 3 semester hours.

Prerequisites: PH 221-222 and CH 221-222. (CH 221-222 may be taken concurrently.)

The course aim is towards a basic understanding of the structure and properties of metals and chemical or physical processes by means of which such characteristics are modified. Discussions will be directed in specific areas: for example metallurgical tests, equilibrium phase diagrams, heat treatment of ferrous and non-ferrous alloys, steel production and hot and cold working of metals. Appropriate laboratory experiments are included in addition to lectures. This approach is designed to give the prospective engineer an acquaintance with metals fabrication and heat treatment.

MT 220. Metallurgy. Credit, 3 semester hours.

Prerequisite: MT 219

Further understanding of physical metallurgy with emphasis on diffusion, precipitation hardening, solidification, heat treatment and crystallography. Several lectures will be devoted to the preparation of metallurgical specimens for microscopic examination, the resulting microstructural appearance and its relation to properties. Lectures will be supplemented by laboratory work such that practical experience may be gained by the student.

MT 324. Nuclear Metallurgy. Credit, 3 semester hours.

Prerequisites: MT 219 and PH 315.

The content of this course will include a general discussion of nuclear reactors, production and fabrication of uranium metal and alloys, metallurgy of zirconium, thorium, plutonium, beryllium, liquid metals used in nuclear reactors, fabrication of reactor components, non-destructive materials testing and the radiation damage of materials.

MT 331. Non-ferrous Metallurgy. Credit, 3 semester hours.

Prerequisite: MT 220.

The physical metallurgy of aluminum, magnesium, copper, nickel, zinc, lead, tin and their alloys is covered by lecture, discussion and laboratory work. Melting, alloying, casting, extruding, rolling, drawing, and heat treatment of the metals are studied with emphasis on the efforts of variables and reasons therefor. Typical mill and service difficulties are analyzed in the light of the specific fundamental principles involved.

MT 342. Steels and Their Heat Treatment. Credit, 3 semester hours.

Prerequisite: MT 220.

This course covers in detail fundamentals of ferrous physical metallurgy such as the iron-carbon phase diagram, time-temperature-transformation diagrams, hardenability, and the effects of alloying elements. Heat treating is discussed in terms of resulting microstructures and physical properties. Practical applications include engineering steels, tool steels, and stainless steels, as well as the requirements of deep drawing, low carbon steel.

Music

MU 102. Music Analysis and History. Credit, 3 semester hours.

Development of music from its early stages to its present form, including the contributions of the great masters to musical evolution; appreciation of music.

MU 103. Contemporary Music. Credit, 3 semester hours.

This course provides a survey of the main currents in contemporary music with emphasis on the leading composers of this century.

MU 105-106. Chorus. Credit, 2 semester hours.

Open to all students interested in group singing. Students with adequate scholastic standing may carry this course for credit in addition to a normal program. Two hours a week.

Orientation

O 101. Introduction to Engineering. One semester. No credit.

A survey to introduce the student to specific obligations of engineering students and to the broad concepts of engineering in several areas, and to appraise both the human and technical aspects. Slide-rule instruction included. Required of all first year engineering students. Satisfactory completion is required for graduation.

O 111. Orientation and Counseling. One semester. No credit.

This is essentially a guidance activity through which students are assisted in 1) making the most satisfactory adjustment to college life and study, 2) establishing intelligent long-range vocational goals for themselves, and 3) conferring with their faculty advisors on matters of curriculum and scheduling. This course is required for graduation.

Personnel Supervision

PS 223. Personnel Administration. Credit, 3 semester hours.

The aim of this course is to provide a foundation in fundamental concepts and a general knowledge of techniques in the administration of personnel relations.

The course covers such subjects as the nature of personnel administration, the handling of personnel problems, employee attitudes and morale. Such techniques of personnel administration as recruitment, interviews, placement, training, employee rating as well as wage policies and administration are dealt with. In order to secure breadth and depth in the approach to personnel problems, simple case studies are used at appropriate points throughout the course.

PS 225. Human Relations in Industry. Credit, 3 semester hours.

Prerequisite: PS 223.

This course continues the study of human relations begun in PS 223 with accent upon the individual's relation to his co-worker. Basic psychological concepts such as motivation, personality, morale, etc. establish the groundwork for discussion within the class of the case studies dealing with associates, subordinates and superiors.

PS 242. Conference Leadership. Credit, 3 semester hours.

Prerequisite: PS 223.

This course is designed to accomplish two main objectives: (1) study in the principles and problems peculiar to conducting business conferences, training conferences, or union-management discussion and (2) practice in conference leadership. Original and creative work is required in the subject matter of the practice conferences. The student may meet this requirement by the completion of a research project in some area of his previous study, or by submitting adequate conference plans based upon practical experience and research on his job.

PS 224. Management-Labor Relations. Credit, 3 semester hours.

Prerequisite: PS 223.

This course aims to present the problems involved in the relations of management and labor. It begins with a history of the labor movement, then considers the intervention of government in labor relations, and explains the legal framework within which plant practices evolve. The discussion of current practices in negotiation, in grievance handling, and in the settlement of disputes is designed to bring out a point of view which may contribute to a greater stability in relations.

Philosophy

PHL 111. Introduction to Problems of Philosophy. Credit, 3 semester hours.

An introduction to reflective thinking on such central issues of human life as man's place in the universe, how we discover truth, the nature of beauty and the good, and the basis of moral choices. Ideas of a few major philosophers from Plato to Dewey will be presented. Stimulation of individual clear thinking upon life's most vital problems will be emphasized in discussion.

PHL 113. Introduction to the History of Philosophy. Credit, 3 semester hours.

The purpose of this course is to instruct the student in the traditions of philosophic thought in the Western cultural heritage.

A chronological development beginning with Pre-Socratic thinkers and coming down to Kant and Hegel is considered. The thoughts of individual men such as Aristotle, St. Thomas, Spinoza, Kant, and others are studied in their important aspects and related to surrounding circumstances. By this means, major philosophic attitudes are outlined.

PHL. 222. Ethics in a changing society. Credit, 3 semester hours.

Prerequisite: PHL 111 or 113.

Offered in February of ODD years.

A constructive appraisal of the major ethical systems in the framework of the problems of contemporary society. Ethical norms which point to the goals and ends of life and their relation to the issues of science, business, the professions and other human activities are examined in problem studies.

PHL. 224. Logic and Scientific Method. Credit, 3 semester hours.

Prerequisite: PHL 111 or 113.

Offered in February of EVEN years.

The purpose of this course is to introduce the student to the formal rigors of deduction, warranted induction, and scientific description, so far as they bear on the theory, application and limits of scientific method.

Class procedure consists of developing the main problems in the logic science, presenting main points via examples, and discussion of applications.

Physical Education

PE 111-112. Physical Education. No credit.

Includes units in sports, rhythms, physical fitness tests, and exercises. The objective of the work is acquaintance with a wide variety of activities. Basic course required of all freshmen.

Physics

PH 106. Analytical Physics 1 w/Lab. Credit, 4 semester hours.

Prerequisite: M 101 (which may be taken concurrently).

Mechanics and heat, statics, kinematics; Newton's laws; work, energy and power; conservation of momentum; circular motion; rotational dynamics; heat and energy; kinetic theory.

Laboratory and Breakage Fee: $15.00 per semester.

PH 201-202. General Physics w/Lab. Credit, 6 semester hours.

Prerequisites: M 108-109 or equivalent.

This is a basic course in physics for technical students with lectures and demonstrations. Attention is paid to the basic principles of physics including mechanics, motion, energy, electricity, heat, sound optics. The course stresses use of the slide rule, applied mathematics and graphical methods of presentation and analysis.

Laboratory and Breakage Fee: $15.00 per semester.

PH 205. Analytical Physics II w/Lab. Credit, 4 semester hours.

Prerequisite: PH 106 or PH 201-202.

Electricity and Magnetism. Electrostatics; direct currents; magnetic effect of a current, electrical instruments; induced emf; inductance and capacitance; simple harmonic motion; physical basis for AC circuits and basic electronics are studied.

Laboratory and Breakage Fee: $15.00 per semester.

PH 206. Analytical Physics III w/Lab. Credit, 4 semester hours.

Prerequisite: PH 205.

Sound, Light, and Atomic Physics. Fundamentals of wave motion; sound; geometrical optics; physical optics; radiation; relativistic mass-energy; electrons, photons and their interactions; atomic structure; nuclear structure and reactions are studied.

Laboratory and Breakage Fee: $15.00 per semester.

PH 221. Engineering Physics w/Lab. Credit, 4 semester hours.

Prerequisite: M 113. (M 221 may be taken concurrently.)

This course serves to introduce the student to scientific and analytical methods. Topics covered include the elements of statics, dynamics, and the mechanics of solids, liquids, and gases, thermometry, expansion, calorimetry, change of state, mechanical equivalent of heat, transmission of heat, and introduction to thermodynamics.

Laboratory and Breakage Fee: $15.00 per semester.

PH 222. Engineering Physics w/Lab. Credit, 4 semester hours.

Prerequisite: M 113. (M 221 may be taken concurrently.)

This is an introductory course in magnetism and electricity which includes permanent magnetism, electrostatics, Ohm's law, Kirchoff's laws, Ampere's law of magnetic force, Faraday's law of electrolysis, magnetization of iron, the magnetic circuit, reactions between currents and magnetic fields, the principles of measuring instruments, and a brief study of acoustics. Topics in light include reflection, refraction, mirrors, prisms, lenses.

Laboratory and Breakage Fee: $15.00 per semester.

PH 315. Nuclear Physics. Credit, 3 semester hours.

Prerequisite: PH 222 or PH 323.

This course includes a survey of the developments in contemporary theories of atoms, molecules, matter and radiation; introduces the student to basic concepts necessary to the understanding of the properties of nuclear particles, natural and artificial radioactivity, nuclear disintegrations, cosmic rays, mesons and the application of nuclear phenomena to some practical problems.

PH 323. Modern Physics. Credit, 3 semester hours.

Prerequisites: PH 222 and M 221.

This course is a survey of atomic and nuclear physics, atomic structure, nuclear properties, radioactivity and nuclear fission.

PH 331. Elementary Astronomy. Credit, 3 semester hours.

Prerequisite: PH 206 or PH 222.

A course in the basic concepts of astronomy for engineers and science majors desiring a background for study of space phenomena.

PH 406. Solid State Physics. Credit, 3 semester hours.

Prerequisite: PH 206 or PH 323.

A study of the elementary principles of electrical behavior of solids as applied to semiconductors, metallurgy and magnetically actuated solid state devices.

Psychology

P 111. Psychology. Credit, 3 semester hours.

This course is designed to give the student a general knowledge of the important principles of human behavior. Topics included are motivation, emotion, learning, personality, intelligence, etc. The utilization of psychological knowledge in relation to everyday human activities is emphasized.

P 211. Social Psychology. Credit, 3 semester hours.

Prerequisite: P 111.

The behavior of man in his social relations. Problems of crowd behavior, social control, propaganda, suggestion, imitation, competition, cooperation, and leadership.

P 212. Business and Industrial Psychology. Credit, 3 semester hours.

Prerequisite: P 111.

Problems and methods in selection, placement, and evaluation of personnel in industry and public service.

Science

SC 111-112. Modern Science. Credit, 6 semester hours.

A survey of the methods of science and the place of physical science in our modern world. The material covered is taken from astronomy, physics, chemistry and geology, with the emphasis on the unity of physical science as a field of knowledge. The aim of the course is to develop a scientific attitude of mind and to provide for the student a summary of man's knowledge about the world in which he lives.

SC 121. Biology. Credit, 3 semester hours.

This course consists of a study of the principles of biology and a survey of the major areas of study, including anatomy, physiology, genetics, evolution and taxonomy.

Social Administration

SA 101. Principles of Public Administration. Credit, 3 semester hours.

Prerequisite: SS 121-122.

The development, organization, functions, and problems of national, state, and local administration.

SA 201-202. Social Administration I and II. Credit, 6 semester hours.

Prerequisite: SA 101.

This course involves an intensive study of the following: welfare legislation, counseling in Social Administration, criminology, fields of social work, introduction to public welfare, introduction to case work, sociology of minority relations, child welfare problems, juvenile delinquency, group dynamics, methods of social research, introductory social statistics, soiology of the family, sociology of industry, population problems, problems of an aging population, problems of redevelopment and urban renewal.

Social Studies

SS 113. Sociology. Credit, 3 semester hours.

This course is a study of the role of culture in society; the person and personality; groups and group behavior; institutions; social interaction and social change.

SS 114. Problems in Sociology. Credit, 3 semester hours.

Prerequisite: SS 113.

From the principles covered in Sociology 113, the student studies the major problems which confront the present social order and the methods in practice and being considered for dealing with these problems.

SS 121. Political Science. Credit, 3 semester hours.

This course deals with the structure and functions of the national government, party organization, national and state relations, and American politics as compared to those of other countries and the trends in modern politics.

SS 122. Political Science. Credit, 3 semester hours.

This course deals with the structure and functions of the state and local governments in the United States.

SS 131. History of Western Civilization to the Renaissance. Credit, 3 semester hours.

This course is a general survey of western history from the ancient beginnings to the Renaissance, designed to give the student an appreciation of historical processes that have shaped our civilization.

SS 132. History of Western Civilization from the Renaissance. Credit, 3 semester hours.

Beginning with the Renaissance, this course gives a general survey of history down to our own time. An emphasis is placed on those historical processes that have shaped our modern institutions and culture.

SS 201. History of the United States to 1865. Credit, 3 semester hours.
Prerequisite: SS 131-132.

This course provides a political, economic and social survey of the history of the United States through the Civil War.

SS 202. History of the United States from 1865. Credit, 3 semester hours.
Prerequisite: SS 131-132.

This course continues the political, economic and social survey of the history of the United States from the end of the Civil War to our own time.

SS 216. Municipal Government. Credit, 3 semester hours.
Prerequisite: SS 121-122.

Intensive study of selected problems of structure, organization and powers of local government; intergovernmental relationships; administrative and personnel management; special application to Connecticut.

SS 302. The U. S. Constitution. Credit, 3 semester hours.
Prerequisite: SS 121-122.

A study of principles and concepts of the Constitution as revealed in leading decisions of the courts. Concepts and principles of judicial review, federalism, separation of powers, implied powers, due process of law, equal protection, the contract clause, etc.

STUDENT PROGRAM ENROLLMENT, FALL 1963

DAY		EVENING	
Arts & Science	250	General Studies	35
Business Administration	340	Business Administration	386
Engineering	207	Engineering	596
Unclassified	38	Unclassified	298
Total	835	Total	1,315

New Haven College Faculty

Credit Programs

1963-1964

Alexander, Ronald T. *Management-Survey*
B.A., Adelphi College
M.A., Trinity College

Arnold, John J. *Personnel Administration*
Director of Labor Relations,
Lycoming Division of AVCO

Arnold, Joseph J. *Industrial Engineering*
B.S., M.S., Southern Connecticut State College
Assistant Professor and Chairman of Department
of Industrial Engineering, New Haven College

Arnold, Nancy G. *Reading Laboratory*
B.S., St. Joseph College
M.A., University of Connecticut

Beeken, Ramona *Humanities & Psychology*
B.S. Southern Connecticut State College
M.A., Trinity College

Bennett, Stephen J. *English and Humanities*
B.S., A.M., Columbia University
Ph.D. candidate at New School for Social Research
Dean of Faculty, New Haven College

Bishoff, Mark L. *Business Administration*
B.S., Wharton School of Finance
Yale Law School

Bixby, William C. *Physics*
B.S., Virginia Polytechnic Institute

Bloch, Barbara B. *Speech*
B.S., Lesley College
M.F.A., Boston University

Boak, Irwin S. *Physics*
B.S., Hobart College
M.A., New York State College for Teachers
Assistant Professor and Chairman of Physics Department,
New Haven College

Bowden, Carleton L. *Mechanical Engineering*
B.E., Yale University
Process Engineer, Pratt & Whitney Aircraft

BOWMAN, JAMES J. A.B., Holy Cross College Director of the Police Science and Administration Program, New Haven College	*Police Science and Administration*
BOYD, ROGER W. B.S., Yale University Power Engineer, The United Illuminating Co.	*Engineering Drawing*
BUDROW, RUSSELL B.E.E., Rensselaer Polytechnic Institute Division Distribution Engineer, United Illuminating Co.	*Physics*
BURNET, EDWARD H. B.I.E., Ohio State University Director of Industrial Engineering and Data Processing, Grace-New Haven Hospital	*Data Processing*
BYARD, RALPH D. M.B.A.—Harvard University Director of Procurement, New Haven College	*Business Administration*
CAMPOCHIARO, JOSEPH B.S., Quinnipiac College Instructor, North Haven School System	*Police Organization & Administration*
CANNAVACIOLO, ALPHONSE B.S., Central Connecticut State College M.A., University of Connecticut Instructor, North Haven High School	*Mathematics*
CHEN, VINCENT LL.B., National Chung Cheng University, China M.A., University of Chicago Ph.D., Yale University Chairman, Political Science Department Albertus Magnus College	*Political Science*
COBB, HAROLD B.E., Yale University Senior Engineer, Huyck Equipment Corporation.	*Metallurgical Engineering*
COLTON, GEORGE W. Ph.B., Yale University Consulting Engineer	*Mechanical Engineering*
CULLINGS, ROBERT E. B.S.M.E., Clarkson College Farrel Corporation	*Mathematics*

DOLAN, THOMAS B.A., Southern Connecticut State College M.A., Columbia University Instructor, Sheridan Junior High School	*Technical Report Writing*
ETTINGER, ALAN E. B.Mus., M.A., Manhattan School of Music Band Director, Instructor, Hillhouse High School	*Chorus*
FALVEY, RICHARD B.A., Yale University Manager, Manufacturers Division, Greater New Haven Chamber of Commerce	*Personnel Administration*
FANNING, JAMES J. B.S., University of Seton Hall M.A., University of Fairfield Assistant Director of Admissions and Director of Guidance	*Psychology*
FANTARELLA, JAMES R. B.S., Physics, Fairfield University MB Electronics Division of Textron Electronics, Inc.	*Mathematics*
FAZIO, RUDY B.S.E.E., University of Connecticut Electrical Engineer, MB Electronics Division of Textron Electronics, Inc.	*Electrical Engineering*
FERNER, WILLIAM R. M.E., Stevens Institute Engineer, The United Illuminating Co.	*Electrical Engineering*
FILLMAN, HARRY W. B.S., Pennsylvania State University Director of Manufacturing, Aerosol Techniques, Inc.	*Management Survey*
FISCHER, FREDERICK F. B.S., Northeastern University C.P.A., Connecticut	*Accounting and Taxation*
FLYNN, WILSON P. B.A., Duke University LL.B., Georgetown University Law partner, Kopkind & Flynn	*Law*
FREEMAN, H. RICHARD B.S., Worcester Polytechnic Institute M. Eng., Yale University Ph.D. candidate, Yale University	*Electrical Engineering*

Galloway, Elizabeth W. — *English Composition*
B.A., M.A., Vanderbilt University

Ghoreyeb, John W. — *Psychology*
B.A., Yale University
M.A., Columbia University
Director of Student Services, New Haven College

Goluboff, Sydney J. — *Journalism*
A.B., Amherst College
Coordinator of Student Publications, New Haven College

Graver, Henry J., Jr. — *Psychology*
B.S., Southern Connecticut State College
M.A., University of Bridgeport
Yale Divinity School
Teacher, East Haven High School

Green, E. Robert — *Electrical Engineering*
B.S.E.E., New York University
Project Engineer, MB Electronics Division
of Textron Electronics, Inc.

Green, Richard — *Electrical Engineering*
B.S.E.E., University of Connecticut
Project Engineer, MB Electronics Division
of Textron Electronics, Inc.

Grey, Robert D. — *Public Administration*
B.A., Wesleyan
Yale Graduate Student

Griffith, Maxwell L. — *Management Survey and Production Control*
Ph.B., Yale University

Gross, Oscar L. — *Electrical Engineering*
M.S.E.E., University of Grenoble, France
M.S.E.E., University of Lausanne, Switzerland
Associate Professor and Chairman of Department of Electrical Engineering, New Haven College

Gunn, Charles — *Electrical Engineering*
B.S. in E.E., Worcester Polytechnic Institute
M.E.E., Rensselaer Polytechnic Institute
Engineering Assistant, The United Illuminating Co.

Hamel, Earl O., Jr. — *Mathematics*
A.B., Marietta College
Graduate Work, Trinity College
Instructor, New Haven College

HANSON, BETTY C. — *Social Studies*
B.A., Southern Methodist University
M.A., Columbia University
Ph.D., candidate at Columbia University

HARMAN, HENRY M. — *Business Finance*
B.S., Business Administration, Lehigh University
M.B.A., Accounting, Tulsa University
C.P.A., Pennsylvania
Controller, Technical Measurement Corporation

HAUGHTON, HENRY O. — *Mechanical Engineering*
Ph.B., Yale University
Registered Professional Engineer (Conn.)
Retired

HEATH, JOHN M. — *Mathematics*
B.A., Wesleyan University
M.A., Yale University
Chairman, Mathematics Department
Hopkins Grammar School

HIEB, LOUIS A. — *English Composition*
B.A., Grinnell College
Yale Divinity School

HOFFMAN, HENRY H. — *Nuclear Metallurgy*
B.S., Michigan College of Mining and Technology
M.S., Brooklyn Polytechnic Institute
Nuclear Fuels Research Laboratory of
Olin-Mathieson Chemical Corporation

HOFMANN, ERNEST — *Physics*
B.S., Yale University
M.S., University of Bridgeport
Instructor, Hamden Hall Country Day School

HOLMAN, WILLIAM G. — *Business Administration*
A.B., Western State College of Colorado
M.A., Columbia University
C.P.A., New York
Chairman, Department of Business Administration
New Haven, College

HOLMES, ELEANOR K. — *English Composition and Literature*
B.A., Antioch College
Yale Law School

HOOK, IRA THOMAS — *Mechanical Processes*
B.C.E., Civil Engineer, University of Michigan
Consulting Engineer

HOWE, LEROY T. A.B., M.A., University of Miami Yale Divinity School	*Psychology*
HUNT, LEIGH W. Former Assistant Chief Draftsman, Safety Electrical Equipment Corporation	*Engineering Drawing*
HUSAIN, SYED I. B.S., Aligarh University, India M.S., Punjab University, Lahore, Pakistan M.S.E.E., Oklahoma State University Project Engineer, Technical Measurement Corporation, North Haven	*Electrical Engineering*
HUTCHINSON, ALLEN C. B.A., Bates College M.A., New Jersey State Teachers College Ph.D., University of Texas Vice President, New Haven College	*Economics*
IACCARINO, CARL J. A.S., New Haven College Electrical Engineer, J-B-T Instruments, Inc.	*Mathematics*
KACILLAS, ALBERT B.S. Central Connecticut College Instructor, Mechanical Arts Wallingford High School	*Engineering Drawing*
KAHARL, ROBERT D. B.S., Quinnipiac College Ernst & Ernst	*Accounting*
KAPLAN, MORTON D. B.S., M.A., Trinity College LL.B., University of Connecticut School of Law Attorney-at-Law, Slavitt & Connery	*Economics*
KAPLAN, NATHANIEL B.A., Randolph-Macon College College University and Press	*English Composition*
KAPLAN, PHILLIP S. B.A., University of Massachusetts M.A., Columbia University Ph.D. candidate, Johns Hopkins University Chairman, Department of Social Studies, New Haven College	*Economics*
KELLY, LOIS B.A., Southern Connecticut State College	*Physical Education*

KIRBY, ROBERT R. *English and Humanities*
B.A., M.A., University of North Carolina
Instructor, New Haven College

KIREMIDJIAN, GARABED D. *English and Humanities*
B.A., Yale University
Ph.D. candidate, Yale University
Instructor, New Haven College

KIRK, WILLIAM F. *Metallurgical Engineering*
B.M., M.E., New York University
Technician Specialist, Olin Mathieson
Chemical Corporation.

KLINE, JOHN W. *Law*
A.B., Tufts University
L.L.B., Boston University
Attorney-at-Law

LAMORTE, RONALD A. *Business Administration*
B.S., University of Connecticut
Ernst & Ernst

LANGEWISCH, PAUL I. *Physics*
B.S.E.E., Bucknell University
Superintendent of Distribution, Center Division,
The United Illuminating Company

LASSETER, ROLLIN A. *Technical Report Writing*
B.A., Vanderbilt University
Yale Divinity School

LATONA, JACK *History*
B.A., Yale University
Yale Law School

LENARD, JOHN F. *Mechanical Engineering*
B.S., University for Technical Sciences, Budapest, Hungary
M.S., University of Connecticut
Assistant Town Engineer, Branford

LEVITSKY, SHEILA A. *Modern Science*
B.S., Brooklyn College
M.A., Hunter College

LIAO, SAM Y. *Electrical Engineering*
B.S., Physics, University of Chicago
M.S., Electrical Engineering, University of Idaho
Assistant Professor, Department of Electrical Engineering,
New Haven College

Liechenstein, Michael I. *Electrical Engineering*
S.B.E.E., Massachusetts Institute of Technology
M.Eng., Yale University
Ph.D. in E.E. candidate, Yale University

Lobay, Ivan *Mechanical Engineering*
Dipl. Ing., Institute of Technology, Brno, Czechoslovakia
M.E., Central University of Venezuela, Caracas, Venezuela
Assistant Professor, Department of Mechanical Engineering, New Haven College.

Lutz, Catherine M. *French*
Sorbonne (License)

Macary, Peter A. *Industrial Engineering*
A.S., New Haven College
B.A., University of Connecticut
Instructor, New Haven College

Maffeo, Edward J. *Art*
B.F.A., Rhode Island School of Design
M.A., Columbia University

Marshall, David I. *English*
B.A., University of Massachusetts
M.A., University of Chicago
Teacher, East Haven High School

Mason, Gerald A. *Electrical Engineering*
B.E., E.E., Yale University
M.S., E.E. candidate, Yale University
Electrical Engineering Laboratory Assistant, Yale University

McCabe, George *Business Administration and Social Studies*
B.A. and Ph.D., Yale University

McEnerney, Stuart J. *Mathematics*
B.S., Southern Connecticut State College
M.A., University of Connecticut
Instructor, Shelton High School

McFarlane, Robert, Jr. *Chemistry*
Sc.B., Brown University
Ph.D., Yale University
Research and Development—U.S. Rubber Company

McGregor, Robert M. *Production Control*
B.A., University of Maine
Vice-President, Adams-McGregor, Inc.

McNeal, Claude I. *English*
B.S., Boston University
Yale Drama School

Menard, Maurice E. *Electrical Engineering*
B.S.E.E., University of Connecticut
Supervision Electrical Engineer,
MB Electronics Division of
Textron Electronics, Inc.

Moffitt, Elizabeth J. *Art*
B.F.A., Yale University

Morrison, Richard C. *Physics*
A.B., Princeton University
M.S., Yale University
Ph.D. Candidate, Yale University
Instructor, New Haven College

Mount, William W., Jr. *English*
B.A., Northwestern University
Yale Divinity School

Mulvey, John P. *Electrical Engineering*
B.S.E.E., University of Connecticut
Engineer, Southern New England Telephone Company

Napoli, Marguerite *Psychology*
B.A., M.A., Southern Connecticut State College

Nation, James *Mathematics*
B.S.E.E., University of Connecticut
Underground Supervisor
United Illuminating Co.

Novick, Phyllis R. *Mathematics*
A.B., Brandeis University

Nowak, George J. *Accounting*
B.S., American International College
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Lydia Bellard	*Secretary*
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Mary K. Burdick	*Recorder*
Ann B. Callahan	*Secretary*
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Jean Casey	*Secretary*
Rita B. Conroy	*Secretary*
Beatrice Cordone	*Secretary*
Maria R. DeLise	*Secretary*
Marion I. DePalma	*Secretary to Vice President*
Sabatina A. Hemingway	*Secretary*
Dorothy I. Levitsky	*Secretary*
Muriel MacKay	*Evening Receptionist*
Adele M. Olivi	*Secretary*
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Howard Szlosek	*Buildings Superintendent, Evenings*

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CALENDAR FOR 1964

JANUARY

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CALENDAR FOR 1965

JANUARY

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JULY

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AUGUST

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SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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